10.0 BUFFERS

10.1 INTRODUCTION

Vegetated buffer strips help maintain the water quality of surface waterbodies and provide habitat and travel corridors for wildlife between habitats. Vegetated buffers are also an effective, attractive way to visually screen certain forms of development. This section discusses the vegetative buffers that will be maintained around the turbines, access roads, the operations and maintenance (O&M) building, the project substation, the dynamic reactive device (DRD), and along the overhead portion of the electrical collector line and the approximately 17-mile electrical generator lead rights-of-way (ROW) for the Bingham Wind Project (project).

Buffers around turbine pads, access roads, the O&M building, the substation, and the DRD will be preserved to provide stormwater and phosphorus treatment. The collector line and generator lead will be continuously vegetated with grass and shrubs, and several methods will be used to maintain vegetated buffers along these proposed corridors. Buffers for the project will include (i) limited-cut stormwater buffers around turbines, roads, O&M building, substation, and the DRD; (ii) the typical ROW buffer created during ROW clearing and follow-up vegetation maintenance; (iii) standard waterbody buffers at streams and other waterbody crossings created by selective clearing during construction and reduced cutting of vegetation during maintenance and operation of the collector line and generator lead; (iv) Atlantic salmon (*Salmo salar*) stream buffers at salmon habitat stream crossings that combine strategic placement of structures, selective clearing during construction, and minimal cutting of vegetation during maintenance and operation of the collector line and generator lead; (v) Significant Vernal Pool buffers that involve selective clearing and minimal cutting of vegetation during construction and maintenance; (vi) buffers for mapped Inland Waterfowl and Wading Bird Habitat (IWWH) that will utilize similar measures as proposed for salmon stream buffers; (vii) Deer Wintering Area (DWA) buffers that involve selective clearing and minimization efforts to create passage corridors through the ROW and minimal cutting of vegetation during operation and maintenance of the collector line and generator lead; (viii) buffers around perennial streams that contain northern spring salamanders (*Gyrinophilus porphyriticus*) or contain suitable habitat for northern spring salamanders; and (ix) a buffer around a forested wetland containing evidence of northern bog lemming (*Synaptomys borealis*) use (e.g., bright green fecal pellets, runways, vegetation clippings).

This section describes the desired objectives, characteristics, and methods to develop and maintain these buffers. The vegetation clearing practices used to preserve and maintain buffers can include: no cutting, limited and selective clearing, or normal mechanized clearing combined with the selective use of herbicides. The specific methods to be utilized within the project area have been tailored to meet the desired buffer objectives in a manner that will provide a clear, achievable set of standards for construction and maintenance personnel. Blue Sky West, LLC and Blue Sky West II, LLC (the Applicants) will maintain these buffers in accordance with the

Post-Construction Vegetation Maintenance Plan (VMP), which is provided in Exhibit 10A of this section.

Table 10-1 below summarizes the nine basic types of buffers proposed for the project and the clearing and maintenance practices that will be implemented to maintain each type. Additional details and variations are provided in the remainder of this section and in the VMP.

Table 10-1. Summary of Buffers for Construction, Operation, and Maintenance of the Bingham Wind Project

Buffer Type	Location	Buffer Width	Clearing During Construction	Cutting During Maintenance and Operation	Pole Placement	Herbicide Use
Turbine Pads, Access Roads, O&M, DRD	As noted on final design drawings	Variable buffer outside of disturbed area and as depicted on the site plans	None in the buffer area	As provided in stormwater plan	Not allowed	Not allowed
Typical Electrical Line ROW	All areas not otherwise restricted	Not applicable	Cut at ground level all vegetation that is greater than 2 inches dbh[1,2]; remove or top all other vegetation that is 8-10 feet or taller	Cut at ground level all capable species that are 8-10 feet or taller; remove or top all other vegetation that is 8-10 feet or taller	Standard	Allowed
Standard Streams	All streams not otherwise restricted; 20 streams	25 feet on each side of waterbody	Cut at ground level all capable species that are 8-10 feet or taller; no other vegetation is cut; limited clearing within 100 feet of stream	Cut at ground level all species that are 8-10 feet or taller; no other vegetation is cut	Not allowed	Not allowed
Salmon Habitat Stream Buffers	ASC[3] Special Concern Salmon Habitat Streams; 28 streams	100 feet on each side of stream	Top[4] or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut	Top[4] or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut	Place as close as possible to increase height of buffer	Not Allowed
Significant Vernal Pools	As noted on final design drawings; 4 SVPs and 3 PSVPs	100 feet around the perimeter of SVPs within the ROW	Cut at ground level all capable species that are 8-10 feet or taller	Cut at ground level all capable species that are 8-10 feet or taller	Avoid and minimize impacts; no poles within vernal pool depressions	Not Allowed in any vernal pools
Inland Waterfowl and Wading Bird Habitat	As noted on final design drawings; 1 location[5]	Within mapped habitat only	Top or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut; if possible, 2-3 snags per 500 feet of corridor will be left to provide nesting habitat	Top or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut	Avoid and minimize impacts; locate poles in upland buffer where possible	Not Allowed

Buffer Type	Location	Buffer Width	Clearing During Construction	Cutting During Maintenance and Operation	Pole Placement	Herbicide Use
Deer Wintering Areas	Moderate and High Value DWAs, as noted on final design drawings; 2 locations	Within mapped habitat only	Top or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; near pole locations, retain conifers to the maximum extent possible	Top or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut; increased vegetation height in four specified locations	Avoid and minimize impacts	Not Allowed
Northern Spring Salamander Stream Buffers	As noted on final design drawings; 25 streams	250 feet on each side of stream	Top or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut	Top or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut	Place as close as possible to increase height of buffer	Not Allowed within 250 feet of streams
Bog Lemming	As noted on final design drawings; 1 location	250 feet surrounding habitat	Top or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut	Top or remove all capable species that could grow to within 15 feet of a conductor in the next 3-4 years; no other vegetation is cut	Avoid and minimize impacts	Not Allowed

[1] dead or danger trees are removed at any time
[2] dbh = diameter at breast height
[3] ASC = Atlantic Salmon Commission
[4] Cut at ground level if topping the tree will not leave sufficient foliage to sustain the tree
[5] This location is the only IWWH impacted by the project
[6] Only DWAs of moderate to high value are addressed in this table

10.2 BASIS FOR PROJECT DESIGN

Multiple factors were considered to determine the number, size, location, and construction and maintenance restrictions associated with the various types of buffers proposed for the project. The Applicants have utilized recent buffer proposals, Maine Department of Environmental Protection (MDEP) regulations and guidance, ISO New England Vegetation Maintenance Standards,[1] and consultations with resource and regulatory agencies and boards to draft buffer and vegetation maintenance standards specific to this project that adhere to regulatory guidelines and protect environmentally sensitive resources. During development of the proposed buffers and associated vegetation maintenance for the project, eight items were identified as critical factors. They are:

1. The desire to use vegetated buffers as part of stormwater and phosphorus control.
2. The requirement to successfully conduct the initial clearing of the overhead collector line and generator lead ROWs within the parameters set forth in the application and to institute the vegetation maintenance requirements.
3. The need to ensure reliable and safe operation of the overhead collector line segments and the generator lead.
4. The scientific objectives and public policy goals of protecting and preserving natural resources and the natural environment while encouraging clean energy production.
5. The state of ROW construction and maintenance practices conducted by the Applicants and throughout the industry.
6. The need to enable landowners access for logging through the buffers and logging within the buffers, provided that the logging practices meet the standards that will be approved via a Declaration of Restrictions with MDEP prior to construction.
7. Approved or proposed buffer plans for other recent wind power projects.
8. The Applicants' commitment to environmentally sensitive development.

These eight factors were taken into consideration when designing buffers for the project that balance the operational needs of the project with the environmental benefits of natural resource buffers. The Applicants believe the designed buffers combine the best features of successful, existing practices with new ideas and more focused resource concerns, while providing procedures and restrictions that are realistic to implement in the field. The Applicants believe that the proposed buffers and VMP for the project also respond to concerns expressed by the MDEP to create uniform and practical vegetative buffer standards.

10.3 BUFFERS FOR TURBINE PADS, ACCESS ROADS, O&M BUILDING, SUBSTATION, AND DRD

Stormwater buffers for the turbines, access roads, O&M building, the project substation, and DRD will include limited-cut areas that will provide stormwater and phosphorus treatment from the developed areas and provide a visual break from project components. In addition to these buffers, the majority of each turbine pad area, excluding the access roads, gravel ring around

[1] ISO New England Operating Procedure No. 3, Transmission Outage Scheduling – Appendix C – ISO New England Right-of-Way Vegetation Management Standard, February 1, 2005.

the turbines, and crane pad at each turbine, will be allowed to revegetate, providing additional buffering capacity (see Section 12, Stormwater Management). The locations of these buffers are depicted on the project drawings.

10.4 TYPICAL ELECTRICAL LINE RIGHT OF WAY CLEARING AND MAINTENANCE PROCEDURES

Construction of the overhead collector line and generator lead requires cutting vegetation to meet ISO-NE Vegetation Maintenance Standards designed to protect against vegetation contacting the wires. Buffers for the overhead collector line and generator lead are designed to provide for that cutting while also maximizing protection of the resources encountered within the ROWs. Specific measures to be used within each resource buffer are detailed in the sections below.

The Applicant's typical ROW construction and maintenance procedures require the retention of low ground cover to the maximum extent practicable during construction, restoration and stabilization of areas affected by construction, and ongoing maintenance activities that promote the long-term growth of diverse, healthy, low vegetation. This results in a utility corridor that provides excellent cover for small animals and birds and significant browse habitat for larger mammals. In addition, it prevents soil erosion and sedimentation of surface water and wetland resources.

Prior to any clearing, resources and their buffers will be flagged in the field in order to be identified by clearing crews. During clearing activities, applicable methods to reduce ground disturbance, erosion, and sedimentation will be employed.

Generally, crews will commence clearing with whole-tree harvesting machines. The remaining vegetation will be removed or topped by hand-clearing crews and/or mowing and flailing machines. Significant branches that overhang the ROWs and any dead or damaged trees outside the ROWs that could contact the proposed power lines or cause an arc if they fall (i.e., danger trees) also will be removed. Large vegetation cut during initial clearing will be chipped on-site or removed, in accordance with the Maine Slash Law.

Temporary erosion and sedimentation control measures will be implemented during construction of the collector line and generator lead. Ground disturbance caused by the use of harvesting equipment will be repaired by returning the ground to its original contour, as needed, and seeding and mulching any bare ground.

10.5 STANDARD STREAM BUFFERS

A minimum 25-foot buffer, as measured from the top of bank on each side, will be established for the standard streams (i.e., perennial and intermittent streams that are not afforded one of the habitat buffers described below) crossed by the ROWs and those adjacent to new access roads. Streams crossed by the project range from perennial streams mapped by the U.S. Geological Survey to small, intermittent stream segments that are disconnected from larger systems. Twenty standard streams are located within the ROWs and will be given this buffer.

These include those streams that are not afforded enhanced buffers described below. See Section 7, Exhibit 7A for detailed locations of the standard streams in the project area.

To minimize soil disturbance adjacent to waterbodies, the collector line and generator lead have been designed to avoid the placement of structures within waterbody buffers. Additional procedures and restrictions will apply within the waterbody buffers during construction and follow-up vegetation maintenance to further protect waterbodies from sedimentation and otherwise minimize any adverse impacts.

Stream buffers are typically designed to provide one or more of the following functions:

- Prevent soil erosion and the resultant sedimentation of surface waters;
- Slow the velocity, increase the infiltration, and otherwise remove sediment and other contaminants from stormwater runoff before it enters surface waters;
- Reduce accessibility of all-terrain vehicle users to streams;
- Provide shade to reduce the warming effect of sunlight (insolation) on water temperature;
- Provide cover for wildlife when accessing waterbodies and traveling across the ROW; and
- Provide visual screens between development and recreational users of a waterbody**.**

As described in the previous section and in Section 14, Basic Standards, which includes Erosion and Sedimentation Control, much of the collector line and generator lead ROWs will remain vegetated with low scrub-shrub and other understory species during construction. Ground disturbance will occur only in localized structure locations or equipment travel lanes. Necessary erosion and sedimentation control measures will be installed and maintained throughout construction to prevent adverse impacts to waterbodies and other resources. During initial clearing and vegetation maintenance in these 25-foot waterbody buffers, the removal of vegetation will be done by hand-cutting or by traveling or reaching into the buffer using low ground pressure mechanized harvesting equipment. During clearing operations, mobile equipment will only be allowed inside the buffer on timber mats, or will be monitored carefully to ensure minimal disturbance/rutting. The locations of temporary equipment crossings of streams will be reviewed and approved by an environmental inspection system before equipment bridges are installed. The type and location of associated erosion and sedimentation controls will be established at that time. Equipment crossings will entirely span the streams to avoid impacts to the stream bed and bank.

Following completion of construction in an area, any temporarily disturbed ground will be restored to original contours and stabilized with permanent seeding. Follow-up vegetation maintenance practices will encourage the growth of dense, low ground cover and shrub species in buffer areas. The use of herbicides is prohibited within stream buffers and within 25 feet of any wetland with water showing at the surface. In addition, no refueling or maintenance of equipment will be performed within stream buffer zones.

A minimum 25-foot buffer, where removal of vegetation is further restricted as described below, will protect streams crossed by the collector line and generator lead from adverse effects from sedimentation and contaminated runoff. Generally, the conversion of forest cover to a scrub-shrub or early successional cover type within an electrical line ROW will improve the ability of the land to absorb runoff due to the increased density of the root mass and near-ground leaf and stem material associated with the resultant vegetative cover. In addition, these proposed buffers are consistent with Maine Department of Inland Fisheries and Wildlife (MDIFW) recommendations to protect waterbodies from sedimentation and surface runoff.

In general, buffer widths of 25 feet work well because large trees within the buffer can typically be removed with a feller-buncher or similar harvesting equipment. Based on existing terrain and size of the tree, such equipment can typically reach into the area and cut and remove a tree without having to travel a significant distance into the buffer and without dragging the harvested tree out of the area. Tree removal becomes more difficult as buffer widths increase beyond approximately 25 feet unless additional access for mobilized tree-clearing equipment is allowed. While hand-cutting of large trees is an alternative, skidding a large tree from more than 25 feet away typically increases the potential for significant soil disturbance, as well as increases the likelihood of damage to remaining vegetation. In short, wider construction buffers do not necessarily minimize the potential for environmental impacts.

In 1993, A.M. Peterson reported in the *North American Journal of Fisheries Management* that the removal of tree canopy on new ROWs increases stream insolation during the short-term; however, within two years, the areas are bordered by dense shrubs and emergent vegetation, and water temperatures are not significantly greater when compared with upstream forested reaches.[2] Sections 10.5.2 and 10.5.3 below describe the restrictions related to vegetation cutting and maintenance that the Applicants will follow to allow for taller vegetation within riparian buffers. This vegetation will consist of tall shrubs and short or topped trees that will provide additional shading of streams and reduce the potential warming effect of direct sunlight. The vegetation will also provide additional cover for birds and animals accessing streams and crossing the ROWs, and will provide some visual screening. As a result, the waterbody buffers will continue to function in a similar manner as before construction.

10.5.1 Structure Placement

To maintain the integrity and maximize the environmental benefits of the riparian buffers, all but one permanent structure will be located greater than 25 feet from any stream, and the number of structures that must be placed within 100 feet of a stream will be limited to the maximum extent practicable. A total of 14 poles on the collector line and 14 poles on the generator lead will be located within 100 feet of a stream.

[2] Peterson, Allen M., *Effects of Electric Transmission Rights-Of-Way on Trout in Forested Headwater Streams In New York*, North American Journal of Fisheries Management, vol. 13, pp. 581-585, 1993.

10.5.2 Standard Stream Buffer Clearing Procedures

Tree cutting in stream buffer zones will be limited. Prior to electrical line construction, only capable species greater than 8 to 10 feet tall (i.e., tree species that are capable of growing to a height to potentially make contact with electrical lines) will be removed. No other vegetation, other than dead or danger trees, will be removed unless necessary for construction access and temporary bridge crossings, and impacts to shrub and herbaceous vegetation will be minimized. Within the 25-foot buffers, capable species will be removed by hand-cutting or by traveling/reaching into the buffer zone with low ground pressure (tracked) tree harvesting equipment. When possible, clearing within the stream buffers will take place during frozen ground conditions or off of timber mats to minimize disturbance. No slash will be accumulated within 50 feet of the edge of the stream.

10.5.3 Standard Stream Buffer Maintenance Restrictions

Vegetation maintenance within stream buffers will typically be conducted on a three- or four-year cycle, depending on growth and vegetation. Consistent with clearing practices for construction, only those trees capable of growing to a height within 15 feet from a conductor within the next 3 to 4 years will be topped or removed within the 25-foot buffer. Removal will be by hand-cutting only, with limited use of motorized equipment in areas that are directly accessible from public or private access roads or from the middle access way established during initial clearing. No herbicides will be used, stored, mixed, or transferred between containers within the stream buffer areas, and no refueling of chain saws or other equipment will be allowed.

Figure 1 in Exhibit 10A illustrates vegetation clearing and maintenance practices within standard waterbody buffer zones. It is important to note that once the capable species (e.g., quaking aspen [*Populus tremuloides*], gray birch [*Betula populifolia*], balsam fir [*Abies balsamea*], white pine [*Pinus strobus*], and red maple [*Acer rubrum*]) are removed, the "desirable species" that will persist and be maintained in the buffers will consist primarily of shrubs (e.g., arrowwood [*Viburnum dentatum*], highbush blueberry [*Vaccinium corymbosum*], speckled alder [*Alnus incana*], and winterberry [*Ilex verticillata*]), grasses, sedges (e.g., *Carex* sp.), and rushes (e.g. *Juncus* sp.). The desirable species will be allowed to grow at their naturally occurring rate and height. Enhancement of the density and vigor of this vegetation will be achieved through the removal of taller, competing species. Additional restrictions on vegetation maintenance will allow for taller vegetation in designated salmon habitat stream buffers to further enhance shading capacity, as described in Section 10.6.

10.6 ATLANTIC SALMON HABITAT STREAM BUFFERS

In 2009, Critical Habitat was designated for the freshwater geographic range occupied by the Gulf of Maine Distinct Population Segment of Atlantic salmon, including all perennial streams, rivers, and lake habitats connected to the marine environment (50CFR226: Federal Register, June 19, 2009). The project area is located partially within one HUC 10 watershed designated as critical habitat, Piscataquis River (1) watershed (HUC 10 0102000401). Therefore, the perennial streams located within the project area that are within this watershed are considered

to be critical habitat for Atlantic salmon. As such, the Applicants have identified additional construction design criteria and further vegetative maintenance restrictions that will provide additional shading of perennial streams within the collector line and generator lead ROWs that are within designated critical habitat to the maximum extent allowed by safety considerations. A minimum 100-foot vegetated buffer, as measured from the edge of the streams on each side, will be established for the salmon habitat streams within the collector line and generator lead ROWs. Twenty-eight perennial streams will be crossed by the overhead collector line and the generator lead and will receive this enhanced buffer.

10.6.1 Salmon Habitat Stream Buffer Structure Placement

To maintain the integrity of the buffers, the Applicants have located permanent structures greater than 100 feet from perennial streams to the maximum extent practicable. Only 28 total poles, 14 on the collector line and 14 on the generator lead, will be located within 100 feet from a perennial stream. The maximum height of vegetation within the ROW is a function of conductor height. The conductors are at their highest closest to a structure, and they are at a low point midway between structures. This will allow for the establishment of taller vegetation closer to structures, which will provide maximum shading of the salmon habitat streams. The additional vegetation height may also enhance shelter for wildlife, although this is not considered a primary objective for this buffer practice.

10.6.2 Salmon Habitat Stream Buffer Clearing Procedures

During initial clearing activity prior to overhead collector line construction, only those trees capable of growing to a height within 15 feet from a conductor within the next 3 to 4 years will be topped or removed within the 100-foot buffer. Topping of trees is the preferred method of vegetation maintenance unless the tree is dead or dying, in which case topping will leave insufficient vegetation to sustain the tree. No other vegetation, other than dead or danger trees, will be removed unless necessary for construction access and temporary bridge crossings. Removal of capable species will be by hand-cutting or with low ground pressure tree harvesting equipment working from inside or outside the buffer. Mats will be used as necessary to prevent excessive rutting. In addition, no refueling or maintenance of equipment, including chain saws, will be performed within the salmon stream buffer zones. No slash will be accumulated within 50 feet of the edge of the stream.

Temporary erosion and sedimentation control measures will be implemented within the salmon habitat stream buffers. Ground disturbance caused by the use of harvesting equipment will be repaired by returning the ground to its original contour, as needed, and seeding and mulching any bare ground.

10.6.3 Salmon Habitat Stream Buffer Maintenance Procedures

Vegetation maintenance within the 100-foot salmon habitat stream buffers will typically be conducted on a three- or four-year cycle, depending on growth and vegetation type. The vegetation maintenance procedures and restrictions within salmon habitat stream buffers are the same as those that apply during initial clearing, with limited use of motorized equipment in

areas that are directly accessible from public or private access roads. No herbicides will be used, stored, mixed, or transferred between containers within the salmon habitat stream buffer areas, and no refueling of chain saws or other equipment will be allowed during maintenance.

Maintaining maximum allowable vegetation height within 100 feet of each bank at the salmon habitat streams will provide taller vegetation that will minimize the potential for warming of water temperatures that might otherwise result from removal of existing vegetation. Exhibit 10A, Figures 2 and 3 illustrate vegetation clearing and maintenance practices within salmon stream buffer zones.

10.7 SIGNIFICANT VERNAL POOL BUFFERS

Vernal pool surveys for the access roads, turbine pads, collector line, and generator lead were conducted during the springs of 2010 through 2012. Four Significant Vernal Pools (SVPs) were identified within or adjacent to the limits of delineation. The project design proposes no impacts to the pool depressions of these four SVPs; however, the project will result in impacts to the critical terrestrial habitat within 250 feet surrounding these SVPs. The impacts will be less than 25 percent of the total critical terrestrial habitat surrounding the pools for the four SVPs. Additionally, three natural, potential vernal pools (PVP) were identified along or adjacent to the collector line portion of the project during wetland delineations in the fall of 2012, outside of the proper time period for vernal pools surveys. For the purposes of project design and for this application, these three PVPs have been treated as Potential Significant Vernal Pools (PSVP) and no impacts are proposed to the pool depressions. Impacts will occur within the 250-foot critical terrestrial habitat surrounding each PSVP. Vernal pool survey results for the access roads, turbine areas, collector line, and generator lead can be found in Section 7, Appendix 7-1 of this application.

10.7.1 Significant Vernal Pool Clearing and Construction Procedures

A minimum 100-foot vegetated buffer, as measured from the edge of the vernal pool depression, will be established for all SVPs and PSVPs crossed by the overhead collector and the generator lead. Large trees will be cut and carefully removed from the buffer area. Due to the limited reach of mobilized tree harvesting equipment (e.g., feller-bunchers or mechanical harvesters), access ways may be needed within the 100-foot buffers. These access ways will enable cutting and removing of large trees without the potential for additional ground disturbance and damage to remaining vegetation that can occur if the trees were hand-cut and dragged out of the buffer with a cable. Low ground pressure equipment will enter/exit the buffer in a manner that minimizes disturbance. Mats will be utilized if necessary to prevent excessive rutting or soil displacement. No equipment travel will be permitted within the SVP or PSVP depressions. No slash will be accumulated within 50 feet of the edge of the depression.

Temporary erosion and sedimentation control measures will be implemented along the access ways. Consistent with the practices along the entire overhead collector and the generator lead ROWs, ground disturbance caused by the use of harvesting equipment will be repaired by returning the ground to its original contour, as needed, and seeding and mulching any bare ground.

Herbicide use within this 100-foot buffer will be prohibited. Prior to construction, only capable species greater than 8 to 10 feet tall will be removed. No other vegetation, other than dead or danger trees, will be removed unless necessary for construction access and temporary bridge crossings. In addition, no refueling or maintenance of equipment, including chain saws, will be performed within SVP or PSVP buffer zones.

Between April 1 and June 30, clearing the ROWs will not be conducted with wheeled or tracked equipment within the 250-foot critical terrestrial habitat surrounding the SVPs or PSVPs. Only hand tools will be utilized. Wheeled or tracked vehicles may be permitted on existing roads or established access ways during this time period to facilitate project construction. Additionally, no clearing will occur within 25 feet of SVPs or PSVPs during this time period.

10.7.2 Significant Vernal Pool Maintenance Procedures

Similar to maintenance operations for stream buffers, only capable species greater than 8 to 10 feet tall will be removed during routine maintenance of the ROWs. Removal will be by hand-cutting only, with limited use of motorized equipment in areas that are directly accessible from public or private access roads or from the access ways established during initial clearing. No herbicides will be used, stored, mixed, or transferred between containers within the vernal pool buffer areas, and no refueling of chain saws or other equipment will be allowed during maintenance.

Maintenance of the ROWs between April 1 and June 30 will not be conducted with wheeled or tracked equipment within the 250-foot critical terrestrial habitat of SVPs and PSVPs. Only hand tools will be utilized. Additionally, no vegetation maintenance will occur within 25 feet of SVPs or PSVPs during this time period.

10.8 INLAND WATERFOWL AND WADING BIRD HABITAT

The proposed project crosses mapped IWWH at one location in the project area. IWWH are habitats mapped by MDIFW that contain an inland wetland complex used by waterfowl and wading birds, plus a 250-foot upland buffer surrounding the wetland. The upland buffer is considered to be part of the mapped habitat. The crossing is located along the generator lead in Parkman. IWWH areas are shown on the final design plans. The Applicants have identified specific construction design criteria and further vegetative maintenance restrictions that will minimize impacts to the mapped habitat to the maximum extent allowed by vegetation maintenance standards.

10.8.1 Inland Waterfowl and Wading Bird Habitat Clearing and Construction Procedures

During initial clearing activity prior to construction of the collector line and generator lead, only those trees capable of growing to a height within 15 feet from a conductor within the next 3 to 4 years will be topped or removed. Topping of trees is the preferred method of vegetation maintenance, unless the tree is dead or dying, in which case topping will leave insufficient vegetation to sustain the tree. No other vegetation, other than dead or danger trees, will be removed unless necessary for construction access and temporary bridge crossings. Removal

of capable species will be by hand-cutting or with low ground pressure tree harvesting equipment working from inside the IWWH. Mats will be used as necessary to prevent excessive rutting. In addition, no refueling or maintenance of equipment, including chain saws, will be performed within the IWWH.

Where possible, two to three snags (i.e., dead, standing trees) will be left per approximately 500 linear feet of corridor within the IWWH to provide nesting habitat for waterfowl. Snags will consist of naturally occurring dead or dying trees or will be created by topping and girdling the largest diameter capable species available in the stand to the maximum height allowable. Snags will only be left or created if they do not present a safety hazard to operation of the collector line and generator lead.

Initial ROW clearing within the IWWH will be performed under frozen ground conditions whenever practical. No clearing within a mapped IWWH will occur within the peak waterfowl and wading bird nesting season (April 15 to July 15) unless otherwise approved in consultation with MDEP and MDIFW. Additionally, no accumulation of slash will be left within 50 feet of the edge of the mapped habitat.

To minimize the risk of bird collisions, bird diverters or aviation marker balls will be installed according to manufacturer's guidelines and applicable transmission line codes where the collector line and generator lead cross mapped IWWH. Additionally, the applicants will locate overhead collector line structures in the upland buffer portion of the habitat to the maximum extent practicable.

10.8.2 Inland Waterfowl Wading Bird Habitat Maintenance Procedures

The vegetation maintenance procedures and restrictions within mapped IWWH are the same as those that apply during initial clearing, including avoiding maintenance procedures between April 15 and July 15. Exhibit 10A details the maintenance practices within mapped IWWH.

10.9 DEER WINTERING AREAS

The generator lead for the project intersects four DWAs mapped by either MDIFW or the Maine Land Use Planning Commission. These four DWAs are #080604 in Kingsbury, #084029 in Parkman, #084031/#084054 in Parkman and Abbot, and #084033 in Parkman. During the winter of 2013, surveys of the mapped DWAs were performed to assess use and habitat characteristics (see Section 7, Exhibit 7C-4). These surveys indicated that two of the DWAs, #084031/#084054 in Parkman and Abbot, and #084033 in Parkman, may be providing suitable DWA cover and could be considered moderate or high value habitat. In these two DWAs, the proposed generator lead corridor has the potential to remove contiguous softwood shelter and/or fragment existing or potential travel corridors through the DWAs. Therefore, the Applicants have proposed measures to help minimize impacts to the DWAs. The clearing and maintenance procedures described below will serve to mitigate the impacts of the new ROW.

10.9.1 Deer Wintering Area Clearing Procedures

During initial clearing activity prior to construction of the generator lead, only those trees capable of growing to a height within 15 feet from a conductor within the next 3 to 4 years will be topped or removed. Topping of trees is the preferred method of vegetation maintenance, unless the tree is dead or dying, in which case topping will leave insufficient vegetation to sustain the tree. No other vegetation, other than dead or danger trees, will be removed unless necessary for construction access and temporary bridge crossings. Removal of capable species will be by hand-cutting or with low ground pressure tree harvesting equipment working from inside the DWA. Mats will be used as necessary to prevent excessive rutting. In addition, no refueling or maintenance of equipment, including chain saws, will be performed within the DWA.

Particular efforts will be made to retain softwood species, especially near the pole locations, as these species are the primary components of a functioning DWA. As described above, the maximum height of vegetation within the ROW is a function of conductor height. The conductors are at their highest closest to a structure, and they are at a low point midway between structures. Accordingly, the Applicants will selectively clear deciduous, capable species near the utility poles within the DWAs, retaining the conifers and allowing for higher coniferous cover within 50 feet of each pole location in these areas. The minimal and selective clearing around the pole will result in taller coniferous vegetation surrounding each pole location with the intent of maintaining a winter travel corridor for deer across the cleared ROW and providing additional winter forage. These travel corridors will allow deer to cross the cleared ROWs with greater ease and minimize impacts to the species during deep snow conditions. Note that an approximately 16-foot wide access way will need to be entirely cleared near each structure in order to allow for construction.

10.9.2 Deer Wintering Area Vegetation Maintenance Procedures

The vegetation maintenance procedures and restrictions within mapped DWAs will be the same as those that apply during initial clearing. Maintenance procedures will aim to establish coniferous corridors around each pole location within the DWAs. Exhibit 10A details the maintenance practices that will be implemented within the DWAs.

10.10 NORTHERN SPRING SALAMANDER STREAM BUFFERS

Surveys for northern spring salamander habitat were conducted in the project area in the summers of 2010 and 2011. Twenty-five streams were identified within the project area that either contained northern spring salamanders or contained habitat with the potential to support northern spring salamanders. The project design proposes no direct impacts to these identified streams; however, vegetation clearing will occur around these streams. Prior to construction, if targeted species-specific surveys are conducted in the identified streams and surveys document neither the presence of spring salamanders nor potential habitat, northern spring salamander stream buffers will not apply for those streams. Note that many of the streams identified as northern spring salamander streams are also designated as critical habitat for Atlantic salmon and are afforded buffer protections accordingly. The buffer requirements for both species are

similar, and conflict between the two sets of requirements is not expected. Further details regarding spring salamander surveys are provided in Section 7, Exhibit 7C-1 of this application.

10.10.1 Northern Spring Salamander Stream Buffers Clearing and Construction Procedures

A minimum 250-foot vegetated buffer will be established around designated streams, as measured from the edge of all streams with documented occurrences of northern spring salamander or with the potential to contain northern spring salamanders. Due to the limited reach of mobilized tree harvesting equipment (e.g., feller-bunchers or mechanical harvesters), access ways may be needed within these buffers. These access ways will enable cutting and removing large trees without the potential for additional ground disturbance and damage to remaining vegetation that can occur if the trees were hand-cut and dragged out of the buffer with a cable. Low ground pressure equipment will enter/exit the buffer in a manner to minimize disturbance. Mats will be utilized if necessary to prevent excessive rutting or soil displacement. Mats may also be used to allow equipment crossing of small streams, provided the mats result in no disturbance to the stream bank or channel. No equipment travel will be permitted within the streams. Large trees will be cut and carefully removed from the buffer area. No slash will be accumulated within 50 feet of the edge of the stream.

Temporary erosion and sedimentation control measures will be implemented along the access ways. Consistent with the practices along the entire overhead collector and the generator lead ROWs, ground disturbance caused by the use of harvesting equipment will be repaired by returning the ground to its original contour, as needed, and seeding and mulching any bare ground.

To provide additional protection to these habitats, herbicide use within 250 feet of the streams is prohibited. Prior to construction, only capable species greater than 8 to 10 feet tall will be removed. No other vegetation, other than dead or danger trees, will be removed unless necessary for construction access and temporary bridge crossings. In addition, no refueling or maintenance of equipment, including chain saws, will be performed within northern spring salamander stream buffer zones.

10.10.2 Northern Spring Salamander Stream Buffers Structure Placement

The Applicants have located permanent structures as far as practical from streams with documented occurrences of northern spring salamander or with the potential to contain northern spring salamanders. Nineteen of the 25 streams will have a structure located within 100 feet of the stream; however, no structures will be located within 25 feet of any of these streams. The maximum height of vegetation within the ROW is a function of conductor height. The closer proximity of the poles to these streams will provide a conductor height that will allow for the establishment of taller vegetation near these streams, which will provide maximum shading of the northern spring salamander streams. The additional vegetation height could also enhance shelter for wildlife, although this is not considered a primary objective for this buffer practice.

10.10.3 Northern Spring Salamander Stream Buffers Maintenance Procedures

Similar to maintenance operations for Atlantic salmon stream buffers, only those trees capable of growing to a height within 15 feet from a conductor within the next 3 to 4 years will be topped or removed during routine maintenance of the ROWs within the 250-foot northern spring salamander buffer. Removal will be by hand-cutting only, with limited use of motorized equipment in areas that are directly accessible from public or private access roads or from the middle access way established during initial clearing. No herbicides will be used, stored, mixed, or transferred between containers within 250 feet of the streams, and no refueling of chain saws or other equipment will be allowed within 250 feet of the streams.

The combination of closer structures and maximum allowable vegetation height within 250 feet of each bank at the northern spring salamander streams will provide taller vegetation that, over the course of a routine maintenance cycle, will minimize the potential for warming of water temperatures that might otherwise result from removal of existing vegetation.

10.11 NORTHERN BOG LEMMING HABITAT BUFFER

Field surveys conducted in late summer 2010 and 2011 identified one area that meets criteria to be considered northern bog lemming habitat. Construction of the electrical collector line adjacent to Route 16 in Mayfield will result in a small amount of vegetation clearing within the 250-foot buffer (see Section 7, Exhibit 7C-1).

10.11.1 Northern Bog Lemming Habitat Buffer Clearing and Construction Procedures

During initial clearing activity prior to construction of the collector line, only those trees capable of growing to a height within 15 feet from a conductor within the next 3 to 4 years will be topped or removed within the portion of the 250-foot buffer that overlaps with the electrical collector line. Topping of trees is the preferred method of vegetation maintenance, unless the tree is dead or dying, in which case topping will leave insufficient vegetation to sustain the tree. No other vegetation, other than dead or danger trees, will be removed unless necessary for construction access and temporary bridge crossings. Removal of capable species will be by hand-cutting or with low ground pressure tree harvesting equipment working from inside the buffer. Mats will be used as necessary to prevent excessive rutting. In addition, no refueling or maintenance of equipment, including chain saws, will be performed within the buffer.

10.11.2 Northern Bog Lemming Habitat Buffer Maintenance Procedures

The vegetation maintenance procedures and restrictions within the 250-foot buffer will be the same as those that apply during initial clearing. Exhibit 10A details the maintenance practices within the buffer.

10.12 POST-CONSTRUCTION OVERHEAD COLLECTOR LINE RIGHT OF WAY VEGETATION MAINTENANCE

Inadequate tree trimming near electrical collector lines can cause power outages and thus diminish the reliability of power delivery. Therefore, it is incumbent upon the Applicants to adequately clear vegetation during construction and adopt vegetation maintenance practices to ensure that reliable power is delivered to the grid and ultimately supplied to consumers. As outlined above, there is also a need to maintain appropriate buffers that serve a range of purposes, including environmental preservation, protection of fisheries, and visual mitigation.

Routine vegetation maintenance of the overhead collector line and generator lead ROWs will be consistent with industry standards to maintain the integrity and functionality of the line, to maintain access in case of emergency repairs, and to facilitate safety inspections. Clearing and trimming vegetation before it gets too close to electrical conductors is essential to ensure the safe, reliable, and uninterrupted availability of electrical power. For example, power outages may occur if trees or other vegetation either come into contact with, or get too close to, the conductors. Insufficient separation between an object and the conductor can create an electric arc that can cause short circuits and fires. Consistent with operating procedures and to ensure safe, reliable operation of the collector line and generator lead, the VMP must ensure that there is a minimum distance of 15 feet between any object and the conductor during all phases of the maintenance cycles. Failure to do so may result in the line short circuiting and/or line outages.

The Applicants' proposed buffer maintenance plan balances the need to maximize buffer width and vegetation height and diversity in those areas where doing so brings about significant environmental benefits, while considering the practical and operational limitations under which the Applicants operate and its mandate to provide reliable power.

10.12.1 Vegetation Maintenance Plan

The Applicants have prepared a VMP to be a stand-alone document containing post-construction vegetation maintenance requirements specific to the project. The VMP, provided in Exhibit 10A, contains detailed descriptions of the procedures and maintenance restrictions that apply to the listed buffers, as well as other protected areas, and the system that will be used to ensure that the specified buffers and other resources are properly identified in the field and protected accordingly. The Applicants will implement the VMP upon completion of construction on the overhead collector line and generator lead ROWs and will continue to follow it during all subsequent vegetation maintenance action.

10.12.2 Invasive Species Management Plan

The Applicants have also prepared an Invasive Species Management Plan, Appendix 10B, which is designed to address the anticipated procedures for controlling the spread of invasive plant species and enhancing the function and value of uplands and wetlands located within the project area. The Invasive Species Management Plan contains detailed descriptions of invasive species known or likely to occur within the project area, recommended control strategies, an invasive species monitoring plan, and reporting recommendations.

Exhibit 10A: Vegetation Management Plan

Bingham Wind Project
Electrical Collector Line and Electrical Generator Lead
Somerset and Piscataquis Counties, Maine

APPENDIX 10A
POST-CONSTRUCTION
VEGETATION MAINTENANCE PLAN

Prepared for:

Blue Sky West, LLC and Blue Sky West II, LLC

Prepared by:

Stantec Consulting

April 2013

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1.0 INTRODUCTION

Blue Sky West, LLC, and Blue Sky West II, LLC (Applicants) have prepared this Post-Construction Vegetation Maintenance Plan (VMP) to be a stand-alone document containing all restrictive maintenance requirements for natural resources along the segment of aboveground electrical collector line (collector line) and the approximately 17-mile electrical generator lead (generator lead) associated with the Bingham Wind Project (project). The requirements set forth in the VMP, as proposed by the Applicants and incorporated into federal, state, and local permits for the project, apply to routine maintenance along the collector line and generator lead rights-of-way (ROW) and are not intended to apply to emergency maintenance and repair actions.

Throughout construction, numerous construction techniques, mitigation measures, and restrictions will be implemented to minimize potential adverse effects on natural resources. To continue that effort, the goal of the VMP is to supply the Applicants' maintenance personnel and contractors with a single, cohesive set of vegetation maintenance specifications for the collector line and generator lead ROWs. The Applicants' or their designated representatives will ensure that these specifications are followed by regularly inspecting all work and requiring corrective steps be taken when necessary. The VMP is intended to be used in conjunction with the final design drawings, which will identify the areas where maintenance restrictions apply.

The natural resources subject to restrictive maintenance requirements include:

- Wetlands and waterbodies;
- Atlantic salmon (*Salmo salar*) habitat streams;
- Significant Vernal Pools regulated by the Maine Department of Environmental Protection (MDEP);
- Designated moderate and high value Inland Waterfowl and Wading Bird Habitats (IWWH);
- Moderate and high value Deer Wintering Areas (DWA);
- Northern spring salamander (*Gyrinophilus porphyriticus*) habitat;
- Northern bog lemming (*Synaptomys borealis*) habitat;
- Locations over significant sand and gravel aquifers; and
- Osprey nests that are built on collector line or generator lead structures.

In locations where individual restrictions or procedures overlap or multiple restrictions apply, the more stringent restrictions and all applicable procedures will be followed by the Applicants' maintenance personnel and contractors.

2.0 TYPICAL RIGHT OF WAY VEGETATION MAINTENANCE PROCEDURES

Routine vegetation maintenance of the collector line and the generator lead is required to: 1) maintain the integrity and functionality of the lines, 2) maintain access in case of emergency repairs, and 3) facilitate safety inspections. The objective of the Applicants' ROW management will, therefore, be to control large woody vegetative growth to ensure the integrity and safe operation of the electrical lines, consistent with the ISO New England Vegetation Maintenance Standard (ISO-NE Vegetation Management Standard).[1] This will be accomplished by practicing Integrated Vegetation Management, which uses a combination of hand-cutting and selective herbicide applications. Mechanical mowing may be used in unusual circumstances to regain control of vegetation, should the typical procedures not be sufficient.

To minimize negative environmental impacts, vegetation will remain in place to the extent practicable. The removal of large trees will be done during initial ROW preparation prior to construction of the new collector line and generator lead. Follow-up maintenance activities during operation of the line require only the selective removal of "capable species," dead, and "danger trees." Capable species are defined

[1] ISO New England Operating Procedure No. 3, Transmission Outage Scheduling – Appendix C – ISO New England Right-of-Way Vegetation Management Standard, February 1, 2005.

as those plant species that are capable of growing tall enough to violate the required clearance between the conductors and vegetation as established by the ISO-NE Vegetation Management Standard. The ISO-NE Vegetation Management Standard requires that a minimum of 15 feet of separation be maintained between vegetation and the conductors. Due to the sag of the electric lines between the poles, which varies with the distance between poles, tension on the wire, electrical load, air temperature, and other variable conditions, the required ISO-NE clearance is typically achieved by removing all capable species and topping other vegetation exceeding 8 to 10 feet in height.

Once the vegetation in an area is under control (usually three to four years following construction), these practices will generally be carried out on four-year or five-year maintenance cycles depending on growth, weather, geographic location, and corridor width. Significant branches that overhang the ROW and any dead or damaged trees outside of the ROW that could contact the power lines or come within 15 feet of a conductor ("danger trees") may be removed as soon as they are identified. Figure 1 illustrates the results of typical vegetation clearing and maintenance to comply with the ISO-NE Vegetation Management Standard.

The following procedures will be implemented during all vegetation maintenance activities to ensure protection of sensitive natural resources:

- All resources and their buffers will be flagged or located with a Global Positioning System prior to any maintenance operations;
- All areas of significant soil disturbance will be stabilized and reseeded immediately following completion of maintenance activity in the area;
- Equipment access through wetlands or over streams will be avoided as much as practicable by utilizing existing public or private access roads, with landowner approval where required;
- Streams will be protected during maintenance. Bridge mats, low ground pressure (tracked) vehicles, or other methods will be used to span small streams that are not afforded enhanced buffers (i.e., Atlantic salmon or northern spring salamander streams) to prevent excessive rutting and disturbance;
- Construction mats or equivalent for equipment support will be used if saturated soils are present in upland areas (e.g., following heavy rain events); and
- Rutting or significant damage to wetland or stream bank vegetation, if any, will be repaired immediately following completion of maintenance activities in the area.

2.1 MECHANICAL TECHNIQUES

During routine vegetation maintenance after construction, the mechanical means of maintaining the height of vegetation on the ROW will consist primarily of hand-cutting, with limited use of motorized equipment in areas that are directly accessible from public or private access roads.

The procedure will be to cut all capable species with a diameter at breast height (dbh) greater than two inches at ground level, except in designated buffer zones. All other vegetation greater than 8 to 10 feet tall and any dead or danger trees will also be cut. All large vegetation cut during routine maintenance is removed, chipped or flailed on site or otherwise handled in accordance with the Maine Slash Law.

2.2 USE OF HERBICIDES

The Applicant's herbicide application program is consistent with most New England utilities and will be used in conjunction with the mechanical methods of vegetation maintenance. It consists of directional spraying on targeted species along the ROW with a low-volume foliar application. In addition, herbicides may be applied to cut stumps and surfaces of larger trees to control future growth. The direct application to individual plants, as opposed to a broadcast application, will control only the targeted woody vegetation, while leaving low-growing plant communities consisting of grasses, forbs, and shrubs to thrive. Selective herbicides will also be used, where possible, to minimize the impacts to non-target species. Aerial application will not be used. Only herbicides that are registered with and approved by the

U.S. Environmental Protection Agency (EPA-approved) and the Maine Board of Pesticides Control (BPC) will be used.

Typically, the ROW will receive herbicide treatment the year following construction and then again two to three years after to gain control of vegetation growth. When control is achieved, treatment will occur on the standard four-year to five-year cycle or as needed. By utilizing selective herbicides and application methods, the ROW will eventually become a dense, low-growing plant community that will discourage the establishment of tree species. Therefore, fewer woody species will require treatment in future applications.

The following procedures will be implemented during all vegetation maintenance activities utilizing herbicides.

- Herbicides will be used in strict accordance with the manufacturer's EPA-approved labeling and will not be applied directly to water or areas where surface water is present.
- Herbicides will not be applied, mixed, transferred or stored within the designated buffers, or applied by broadcast application within 25 feet of wetlands with visible surface water or wetlands dominated by emergent or aquatic plants.
- Herbicides will not be applied, mixed, transferred or stored within 75 feet of Significant Vernal Pool basins.
- Herbicides will not be applied, mixed, transferred or stored over significant sand and gravel aquifers.
- Herbicides will not be applied, mixed, transferred, or stored within 100 feet of any known well or spring or within 100 feet of a home or other human dwelling. Prior to performing herbicide applications, the project area ROWs will be reviewed to make sure no new wells, springs, homes, or other dwellings are present along the ROWs.
- Herbicides will not be applied, mixed, transferred, or stored within 250 feet of any residence listed on the BPC's Pesticide Notification Registry. Consistent with BPC guidelines, prior to any herbicide applications along the ROWs, the herbicide application contractor will check the latest Pesticide Notification Registry for any residences or landowners that may be listed. Note that no landowners within or adjacent to the project area are listed on the 2013 Pesticide Notification Registry.
- Only herbicides with a low potential for mobility and low persistence in the environment will be utilized in sensitive areas such as wetlands.
- Herbicides will not be applied to any area when it is raining or when wind speed exceeds 15 miles per hour as measured on-site at the time of application.
- The foreman of every crew using herbicides will be licensed by the Maine BPC and will remain in eye contact and within earshot of all persons on his/her crew applying herbicides. At least one individual from any company applying herbicides for the Applicants must also hold a Commercial Master License issued by the BPC and must be in Maine during any application. Application of pesticides will be in accordance with applicable regulations promulgated under the Maine Pesticides Control Act, including those regulations to minimize drift, to maintain setbacks from sensitive areas during application, and to maintain setbacks from surface waters during the storing/mixing/loading of herbicides.
- The chemicals will typically be mixed in a truck-mounted tank that stays on the access roads. The application will be done by personnel with backpacks who travel along the ROWs by foot or by all-terrain vehicle and spot-treat target species.
- Each target tree will be sprayed just enough to wet the foliage while avoiding any dripping or run-off.

As mentioned previously, application of herbicides is prohibited within 25 feet of streams and wetlands that have water present at the surface. The location of all streams, wetlands, and significant groundwater aquifers within the ROWs will be shown on the final design drawings. The presence of water on the surface will be determined prior to herbicide use in any wetland. The locations of other resources where herbicide application is prohibited are provided in the following sections. Crew leaders will assure that all

sensitive resources and buffers are located, and properly delineated on the ground for clear identification by the applicators.

3.0 VEGETATION MAINTENANCE WITHIN STANDARD STREAM BUFFERS

A minimum 25-foot buffer, as measured from the top of bank on each side, will be established for all streams within the collector line and generator lead ROWs. Special procedures and restricted activities will apply within these stream buffers during construction and follow-up vegetation maintenance. Vegetation maintenance within stream buffers will typically be conducted on a three-year or four-year cycle, depending on growth and vegetation. This section describes the restrictions related to vegetation cutting and maintenance that will apply within all standard stream buffers. Table 1, provided at the end of this section, includes the names, locations, and details of the standard streams crossed by the collector line and generator lead. The location of all streams within the ROWs also will be shown on the final design drawings.

It is important to note that the vegetation maintenance procedures and restrictions that apply to typical ROW maintenance (Section 2.0) also apply within the standard stream buffers. The applicable procedures and restrictions include the BPC restrictions, restoring and stabilizing disturbed soils, disposition of slash in accordance with the Maine Slash Law, ROW access, the restrictions on stream crossings by equipment within the ROW, and the use of construction mats, low ground pressure equipment, and/or other procedures related to work in wetlands.

The following additional restrictions apply to vegetation maintenance within 25-foot standard stream buffers:

- Prior to line construction and during post-construction vegetation maintenance after construction, only capable species vegetation greater than eight to ten feet will be removed. No other vegetation, other than dead or danger trees, will be removed.
- Under most terrain conditions, removal of capable species, dead or danger trees will be accomplished by hand-cutting or by traveling into the buffer zone with low pressure tree harvesting equipment, and mats as necessary.
- No herbicides will be used, stored, mixed or transferred between containers within the buffer areas.
- No refueling or maintenance of equipment, including chain saws, will occur within the buffer areas.
- No accumulation of slash will be left within 50 feet of the edge of any stream.

The additional restrictions on vegetation maintenance within stream buffers are intended to allow taller vegetation to provide additional shading of streams and reduce the warming effect of direct sunlight (insolation). Low ground cover within the buffer will also remain to filter sediment from surface runoff. As a result, the buffers will continue to function in a similar manner as they did before construction. The restrictions are also intended to minimize ground disturbance and ensure that herbicides and petroleum products are not able to reach the waterbody via surface runoff or groundwater transport.

Figure 1 illustrates vegetation clearing and maintenance practice within standard stream buffer zones.

Table 1. Standard Streams Crossed by the Bingham Wind Project Collector Line and Generator Lead

Resource ID	Associated Wetland (ID)	Flow Regime	Channel Width (feet)	Blue line on USGS
Collector Line				
S011	MAY_W118	Intermittent	3.5	No
S012	MAY_W122	Intermittent	1.5	No
S013	MAY_W128	Intermittent	1	No
S015	No associated wetland	Intermittent	1	No
S016	No associated wetland	Intermittent	1	No
S019	MAY_W137	Intermittent	4	No
S020	MAY_W137	Intermittent	4	No
S026	MAY_W170	Intermittent	4	No
S031	No associated wetland	Intermittent	5	No
S034	MAY_W189	Intermittent	3.5	No
Generator Lead				
S044	No associated wetland	Intermittent	4	Yes
S053	KING_W340	Intermittent	2	No
S054	KING_W346	Intermittent	3.5	Yes
S055	KING_W353	Intermittent	6	No
S059	PARK_W356	Intermittent	2.5	No
S061	PARK_W367	Intermittent	4.5	No
S064	PARK_W372, PARK_W373	Intermittent	3.5	No
S067	ABB_W377	Intermittent	4.5	No
S068	ABB_W383	Intermittent	4.5	No
S073	ABB_W402, ABB_W403	Intermittent	2.5	No

4.0 VEGETATION MAINTENANCE WITHIN SALMON STREAM BUFFERS

In 2009, Critical Habitat was designated for the freshwater geographic range occupied by the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon, including all perennial stream, river, and lake habitats connected to the marine environment (50CFR226: Federal Register, June 19, 2009). The project is located within one HUC-10 watershed that is designated as critical habitat for Atlantic salmon under the Endangered Species Act: Piscataquis River (1) (#0102000401). Therefore, the perennial streams located within the project area that are within this watershed are considered to be critical habitat for Atlantic salmon. Six perennial streams are located within the proposed collector line ROW and 22 perennial streams are located within the generator lead ROW. These streams are listed in Table 2 below.

The Applicants will establish a 100-foot buffer along those perennial streams designated as providing critical Atlantic salmon habitat and these streams will be subject to additional maintenance restrictions to enhance the shading of the streams to the maximum extent allowed by the ISO-NE Vegetation Maintenance Standard. Vegetation maintenance near the salmon habitat streams will be subject to the

same procedures and prohibitions, as applicable, that are required in the typical ROW and for standard stream buffers, namely: BPC requirements, restoring and stabilizing disturbed soils, disposition of slash, ROW access constraints, the restrictions on stream crossings by equipment within the ROW, the use of construction mats and other procedures related to work in wetlands, the limited use of mechanized tree harvesting equipment, and the prohibition on the use, mixing, or transfer of herbicides and petroleum products within the buffer zone.
The following additional restrictions apply to vegetation maintenance within salmon stream buffers:

- Only those trees capable of growing to a height within 15 feet of a conductor within the next 3 to 4 years will be topped or removed. No other vegetation other than dead or danger trees will be removed; and
- Tree topping is the preferred method of vegetation maintenance, unless the tree is dead or dying, or unless topping will leave insufficient vegetation to sustain the tree.
- No salmon streams will be crossed in stream with maintenance equipment.

Figures 2 and 3 illustrate vegetation clearing and maintenance practices within salmon stream buffer zones.

Table 2. Atlantic Salmon Streams Crossed by the Bingham Wind Project Collector Line and Generator Lead

Resource ID	Associated Wetland (ID)	Type	Channel Width (feet)	Blue line on USGS
Collector Line				
S014	MAY_W129	Perennial	6.5	No
S022	MAY_W155, MAY_W156, MAY_W157	Perennial	7.5	Yes
S023	No associated wetland	Perennial	40	Yes
S024	MAY_W161	Perennial	8	No
S025	MAY_W164	Perennial	6.5	Yes
S027	MAY_W170, MAY_W171, MAY_W176	Perennial	6	Yes
Generator Lead				
S043	No associated wetland	Perennial	4.5	No
S045	No associated wetland	Perennial	17.5	Yes
S046	No associated wetland	Perennial	3	No
S047	No associated wetland	Perennial	2	No
S048	No associated wetland	Perennial	6	Yes
S049	No associated wetland	Perennial	6.5	Yes
S050	No associated wetland	Perennial	20	Yes
S051	No associated wetland	Perennial	4	Yes
S052	No associated wetland	Perennial	40	Yes
S056	KING_W354	Perennial	4	No
S057	KING_W355	Perennial	4	Yes
S058	PARK_W356	Perennial	7.5	Yes
S060	PARK_W363	Perennial	6	Yes
S062	PARK_W370	Perennial	37.5	Yes
S063	No associated wetland	Perennial	11	No
S065	No associated wetland	Perennial	7	Yes
S066	ABB_W376	Perennial	8.5	Yes
S069	ABB_W384, ABB_W385, ABB_W386	Perennial	6	Yes
S070	ABB_W387	Perennial	5	No
S071	PARK_W396	Perennial	11	No
S074	ABB_W404	Perennial	3.5	Yes
S075	PARK_W411	Perennial	9	Yes

5.0 VEGETATION MAINTENANCE AT SIGNIFICANT VERNAL POOL LOCATIONS

Vernal pool surveys for the collector line and generator lead were conducted during the springs of 2010, 2011, and 2012. Four Significant Vernal Pools (SVPs) were identified within or adjacent to the limits of delineation. The project will result in impacts to the critical terrestrial habitat within 250 feet surrounding

these SVPs. Additionally, three natural, potential vernal pools (PVP) were identified along or adjacent to the collector line portion of the project during wetland delineations in the fall of 2012, outside of the proper time period for vernal pools surveys. For the purposes of project design, these three PVPs have been treated as Potential Significant Vernal Pools (PSVP) and no impacts are proposed to the pool depressions. Impacts will occur within the 250-foot critical terrestrial habitat surrounding each PSVP. Vernal pool locations will be shown on the final design drawings. Complete survey results can be seen in Section 7, Appendix 7-1 of the MDEP application.

Vegetation maintenance within 100 feet of all SVPs and PSVPs will consist of cutting all capable species and topping other vegetation that may interfere with the 15-foot clearance between conductor and vegetation. Removal will be by hand-cutting only, with limited use of motorized equipment in areas that are directly accessible from public or private access roads or from the middle access way established during initial clearing. The use of mechanized equipment will not be allowed within the SVP or PSVP depression. No herbicide use will be allowed within 100 feet of the pool basins.

Between April 1 and June 30, no vegetation maintenance using tracked or wheeled equipment will be performed within the 250-foot critical habitat of SVPs or PSVPs. Maintenance will be performed using hand tools only and no vegetation maintenance will occur within 25 feet of any SVP or PSVP depression during this time period.

Table 3 below summarizes the locations of the SVPs and PSVPs identified within or adjacent to the ROWs.

Table 3. Significant Vernal Pools and Potential Significant Vernal Pools within or adjacent to the Bingham Wind Project Collector Line and Generator Lead ROWs

Pool ID	Associated Wetland ID	Pool Type	Pool Origin
SVP_07AL_N	MAY_W090	SVP	Natural
SVP_50KN_N	Wetland outside project area	SVP	Natural
SVP_108SK_N	Wetland outside project area	SVP	Natural
SVP_53KN_N	ABB_W385	SVP	Natural
PVP_01CF_N	Wetland outside project area	PSVP	Natural
PVP_03CF_N	Wetland outside project area	PSVP	Natural
PVP_04CF_N	Wetland outside project area	PSVP	Natural

6.0 VEGETATION MAINTENANCE WITHIN DESIGNATED INLAND WATERFOWL AND WADING BIRD HABITAT

The proposed generator lead crosses a mapped IWWH in Parkman. This IWWH area will be shown on the final design drawings.

The following restrictions will apply to vegetation maintenance within mapped IWWH:

- Only those trees capable of growing to a height within 15 feet of a conductor within the next 3 to 4 years will be topped or removed. No other vegetation other than dead or danger trees will be

removed;
- Tree topping is the preferred method of vegetation maintenance, unless topping will leave insufficient vegetation to sustain the tree;
- Existing dead or dying trees of capable species shall be topped at a height so as to provide nesting habitat (snags) for waterfowl, provided the snags do not present a safety hazard for operation of the line; and
- No herbicide applications will be allowed within the mapped IWWH.

In addition to other applicable maintenance requirements, vegetation maintenance activity using motorized equipment (i.e., all-terrain vehicles) within moderate and high value IWWH will be prohibited between April 15 and July 15 each year to minimize the potential disruption of avian breeding and nesting activity, unless in an emergency with approval from MDEP and MDIFW. Hand-cutting without the use of mechanized equipment (e.g., mechanized brush saws or chain saws) is allowed during this time period.

7.0 VEGETATION MAINTENANCE WITHIN MAPPED DEER WINTERING AREAS

The generator lead for the project intersects four DWAs mapped by either MDIFW or the Maine Land Use Planning Commission. These four DWAs are #080604 in Kingsbury, #084029 in Parkman, #084031/#084054 in Parkman and Abbot, and #084033 in Parkman. During the winter of 2013, surveys of the mapped DWAs were performed to assess use and habitat characteristics. These surveys indicated that two of the DWAs, #084031/#084054 in Parkman and Abbot, and #084033 in Parkman, may be providing suitable DWA cover and could be considered moderate or high value habitat. In these two DWAs, the proposed generator lead corridor has the potential to remove contiguous softwood shelter and/or fragment existing or potential travel corridors through the DWAs. The Applicants have identified specific vegetative maintenance restrictions that will minimize impacts to the mapped DWA habitat in these two areas to the maximum extent allowed by the ISO-NE standards.

The following restrictions will apply to vegetation maintenance within the two mapped DWAs that are providing suitable wintering habitat:

- Only those trees capable of growing to a height within 15 feet of a conductor within the next 3 to 4 years will be topped or removed. No other vegetation other than dead or danger trees will be removed;
- Tree topping is the preferred method of vegetation maintenance, unless the tree is dead or dying, or unless topping will leave insufficient vegetation to sustain the tree;
- Within 50 feet on either side of each pole location in the DWAs, focus will be given to retain coniferous species that will provide vegetated travel corridors across the cleared ROW. Deciduous, capable species will be selectively harvested and coniferous species will be allowed to grow to the maximum allowable height as provided in the ISO-NE standards; and
- No herbicide applications will be allowed within the mapped DWAs.

8.0 VEGETATION MAINTENANCE WITHIN NORTHERN SPRING SALAMANDER HABITAT BUFFERS

Twenty-five streams were identified during field surveys as potential northern spring salamander habitat. The project design proposes no direct impacts to these identified streams; however, vegetation clearing will occur around these streams. Note that many of the streams identified as northern spring salamander streams are also designated as critical habitat for Atlantic salmon and are thus afforded enhanced buffer protections associated with this habitat. The buffer requirements for both species are similar, and conflict between the two sets of requirements is not expected. The streams that are providing northern spring salamander habitat are presented in Table 4 below.

The Applicants will establish a 250-foot buffer along those streams designated as providing suitable habitat for northern spring salamanders and these streams will be subject to additional maintenance restrictions to enhance the canopy cover for these waterbodies to the maximum extent allowed by the

ISO-NE Vegetation Maintenance Standard. Vegetation maintenance near the northern spring salamander habitat streams will be subject to the same procedures and prohibitions, as applicable, that are required in the typical ROW and for standard stream buffers, namely: BPC requirements, restoring and stabilizing disturbed soils, disposition of slash, ROW access constraints, the restrictions on stream crossings by equipment within the ROW, the use of construction mats and other procedures related to work in wetlands, the limited use of mechanized tree harvesting equipment, and the prohibition on the use, mixing, or transfer of herbicides and petroleum products within the buffer zone.

The following additional restrictions apply to vegetation maintenance within northern spring salamander stream buffers:

- Only those trees capable of growing to a height within 15 feet of a conductor within the next 3 to 4 years will be topped or removed. No other vegetation other than dead or danger trees will be removed; and
- Tree topping is the preferred method of vegetation maintenance, unless the tree is dead or dying, or unless topping will leave insufficient vegetation to sustain the tree.
- No northern spring salamander streams will be crossed in stream with maintenance equipment.

Table 4. Northern Spring Salamander Streams crossed by the Bingham Wind Project Collector Line and Generator Lead

Resource ID	Associated Wetland (ID)	Type	Average Bank Full Width (Ft.)
Collector Line			
S007	MAY_W112	Perennial	10.5
S009	MAY_W116	Perennial	5.5
S014	MAY_W129	Perennial	6.5
S022	MAY_W155, MAY_W156, MAY_W157	Perennial	7.5
S023	No associated wetland	Perennial	40
S024	MAY_W161	Perennial	8
S025	MAY_W164	Perennial	6.5
S027	MAY_W170, MAY_W171, MAY_W176	Perennial	6
Generator Lead			
S043	No associated wetland	Perennial	4.5
S045	No associated wetland	Perennial	17.5
S046	No associated wetland	Perennial	3
S047	No associated wetland	Perennial	2
S048	No associated wetland	Perennial	6
S049	No associated wetland	Perennial	6.5
S050	No associated wetland	Perennial	20
S051	No associated wetland	Perennial	4
S052	No associated wetland	Perennial	40
S057	KING_W355	Perennial	4
S058	PARK_W356	Perennial	7.5
S062	PARK_W370	Perennial	37.5
S063	No associated wetland	Perennial	11
S065	No associated wetland	Perennial	7
S066	ABB_W376	Perennial	8.5
S070	ABB_W387	Perennial	5
S071	PARK_W396	Perennial	11

9.0 VEGETATION MAINTENANCE WITHIN NORTHERN BOG LEMMING HABITAT BUFFERS

The collector line for the project intersects a small portion of the 250-foot buffer surrounding potential northern bog lemming habitat along Route 16 in Mayfield. The Applicants have identified specific vegetative maintenance restrictions that will minimize impacts to the habitat buffer in this one area to the maximum extent allowed by the ISO-NE standards.

The following restrictions will apply to vegetation maintenance within the northern bog lemming habitat buffer:

- Only those trees capable of growing to a height within 15 feet of a conductor within the next 3 to 4 years will be topped or removed. No other vegetation other than dead or danger trees will be removed;
- Tree topping is the preferred method of vegetation maintenance, unless the tree is dead or dying, or unless topping will leave insufficient vegetation to sustain the tree; and
- No herbicide applications will be allowed within the 250-foot habitat buffer.

10.0 OTHER: MAINTENANCE PROCEDURES FOR OSPREY NESTS

It is common for osprey to nest on the top of power line structures. Typically, nests are allowed to remain in place unless there is a chance they are going to come into contact with the conductor. Ospreys use nests from year to year and build up the nests annually. Sometimes the nests get so large they can touch a conductor or be close enough to create an arc. If there is a risk of arcing or conductor contact, the Applicants will follow the guidelines below for removing nests, which usually takes place in the fall of the year. No permit is required for this activity.

The following guidelines will be followed for any removal of an osprey nest that is built on the collector line or generator lead structures:

- Only inactive nests will be removed. Nests that contain eggs or chicks will not be disturbed;
- Nests will only be removed between September 1 and April 1, and only if birds are not actively using the nest;
- Nests will be relocated to nesting platforms when possible, otherwise they will be destroyed when they are removed;
- A designated person will be notified of the date, number of nests moved or destroyed, and the town where the nest(s) are/were located. Such person will keep an updated, running total of nests moved or destroyed. The list of nests removed will be distributed to the line supervisors periodically. The designated person will evaluate what steps may need to be taken if more than 20 nests require action in one year; and
- The designated person will submit an annual report of all osprey nests moved or removed by the Applicants to the Maine Department of Inland Fisheries and Wildlife.

11.0 SYSTEM FOR LOCATING/MARKING RESTRICTED AREAS

Prior to conducting maintenance activities along the ROWs, a foreman or supervisor will identify all restricted areas with flagging or signage. The Applicants have a system in place for locating specific areas or features in the field by maintaining a database that references of the specific sensitive areas to the nearest structure (pole) or road location. In some instances, signage is attached to the structures. All structures along the collector line and generator lead will be numbered at the time of construction. The numbers will be included on the final design drawings. The Applicants' database will include sensitive areas along the lines and their locations relative to the nearest numbered structure. Those data will then be incorporated in this VMP.

All protected resources, designated buffer areas, herbicide application buffers from known wells or springs, homes or other human dwellings, and herbicide application buffers for any residence listed on the BPC's Pesticide Notification Registry will be located in this manner. The distance and direction from the nearest structure to the sensitive area will be included beside the name of the area and the structure number. Maintenance contractors working on the ROWs will be given the VMP and will receive appropriate environmental training prior to implementation of the VMP (Section 12.0).

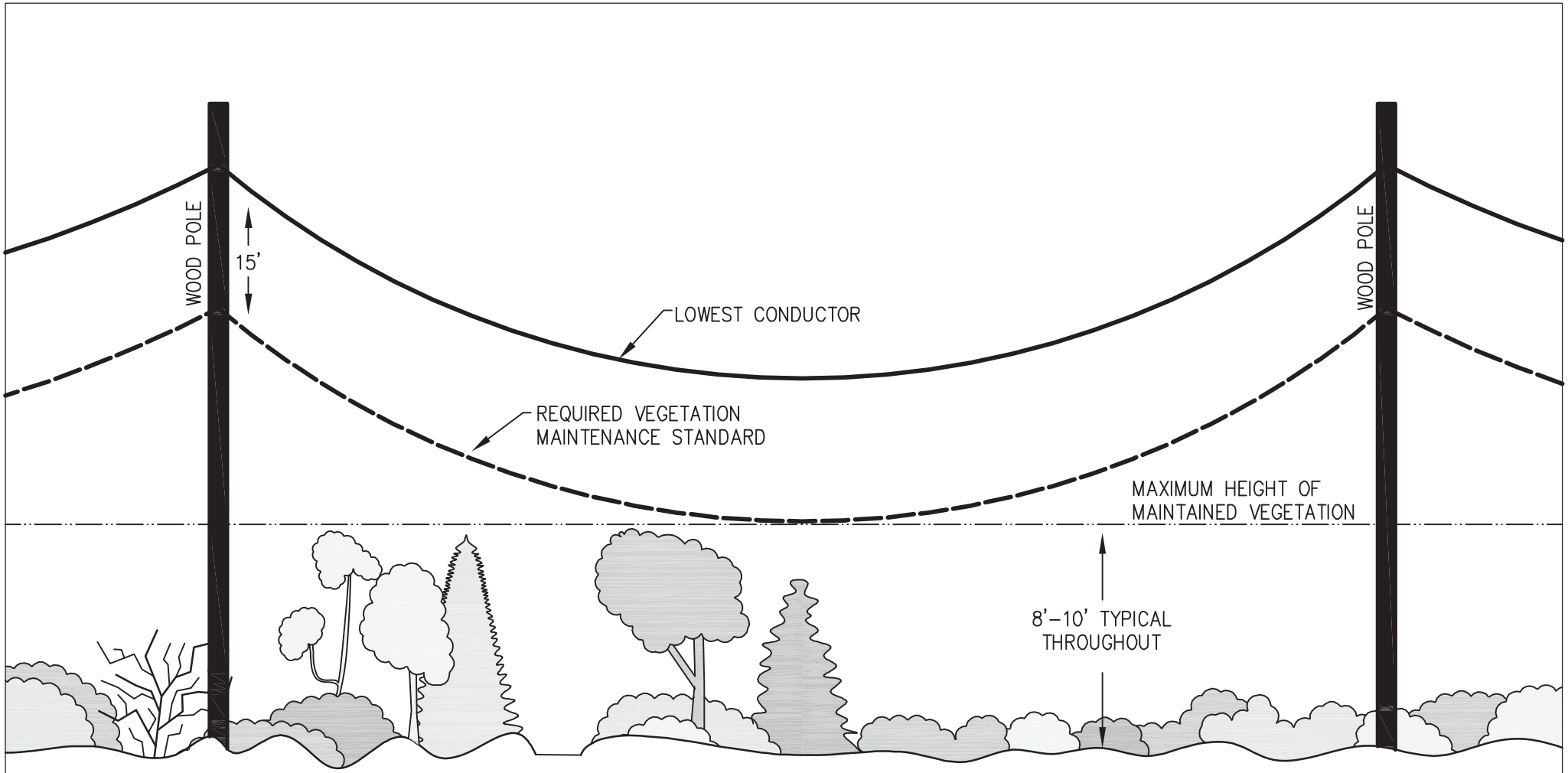
Use of the VMP in conjunction with the final design drawings will enable maintenance contractors to locate and mark restricted areas in the field.

12.0 TRAINING OF MAINTENANCE PERSONNEL

All of the Applicants' personnel and contractors who will be participating in vegetation maintenance activities on the ROWs will receive appropriate environmental training before being allowed access to the ROWs. The level of training will be commensurate with the type of duties of the personnel. The training will be given prior to the start of maintenance activities. Replacement or new employees that did not receive the initial training will receive similar training prior to performing any maintenance activities on the ROWs.

Prior to receiving maintenance training, each participant will be required to review this Post-Construction VMP. The training session will consist of a review of all protected resources and restricted areas, the respective maintenance requirements and restrictions for each, and a review of how these areas and resources can be located in the field (i.e., relative to the nearest numbered structure). Training will include familiarization with and use of the final design drawings in conjunction with the contents of this VMP, as well as basic causes and preventive and remedial measures for contamination, erosion, and sedimentation of water resources. Training will also include a review of safety, clean-up, monitoring, and reporting requirements.

FIGURES



NOT TO SCALE

Figure 1
Bingham Wind Project
Typical ROW Vegetation
Clearing/Maintenance

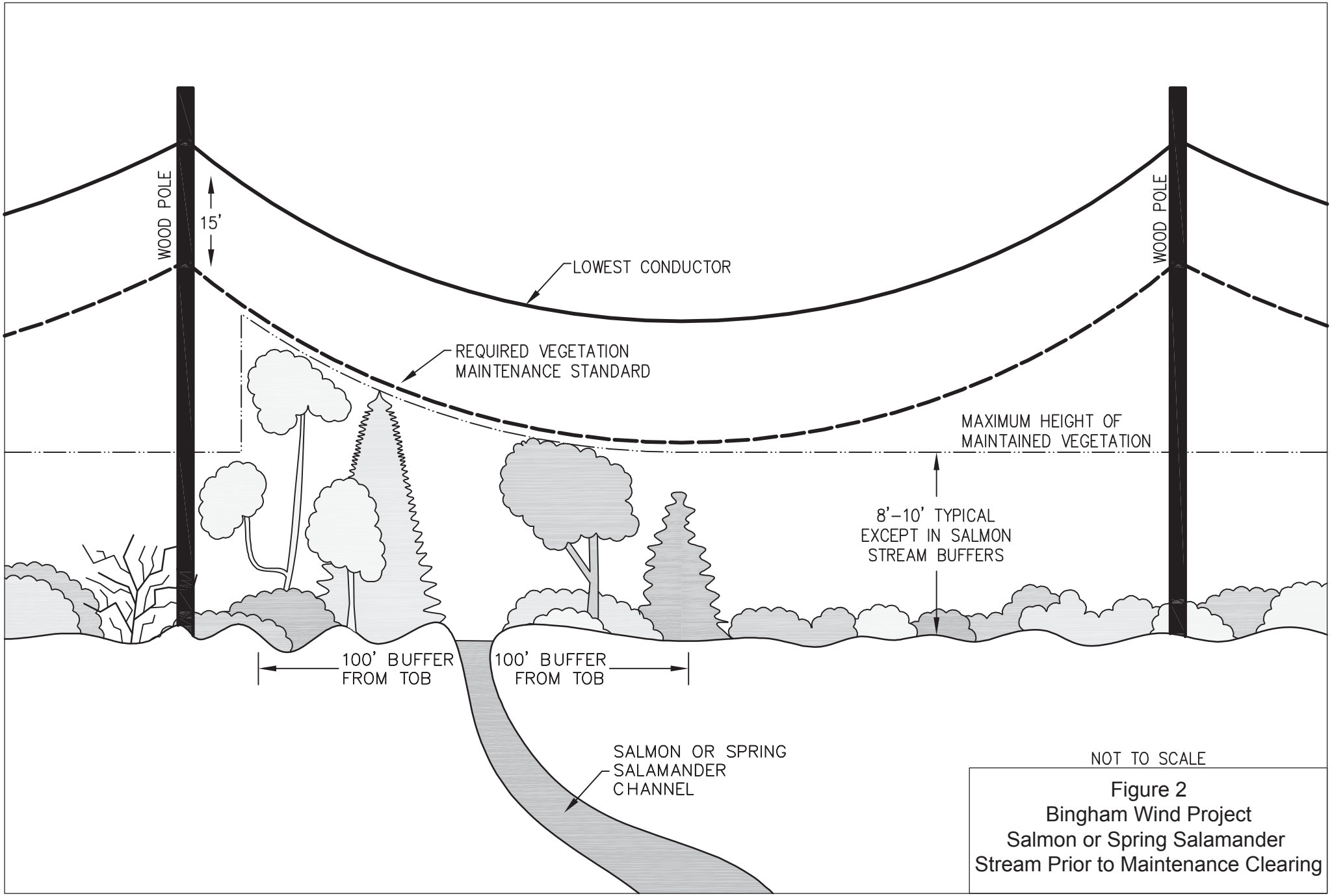


Figure 2
Bingham Wind Project
Salmon or Spring Salamander
Stream Prior to Maintenance Clearing

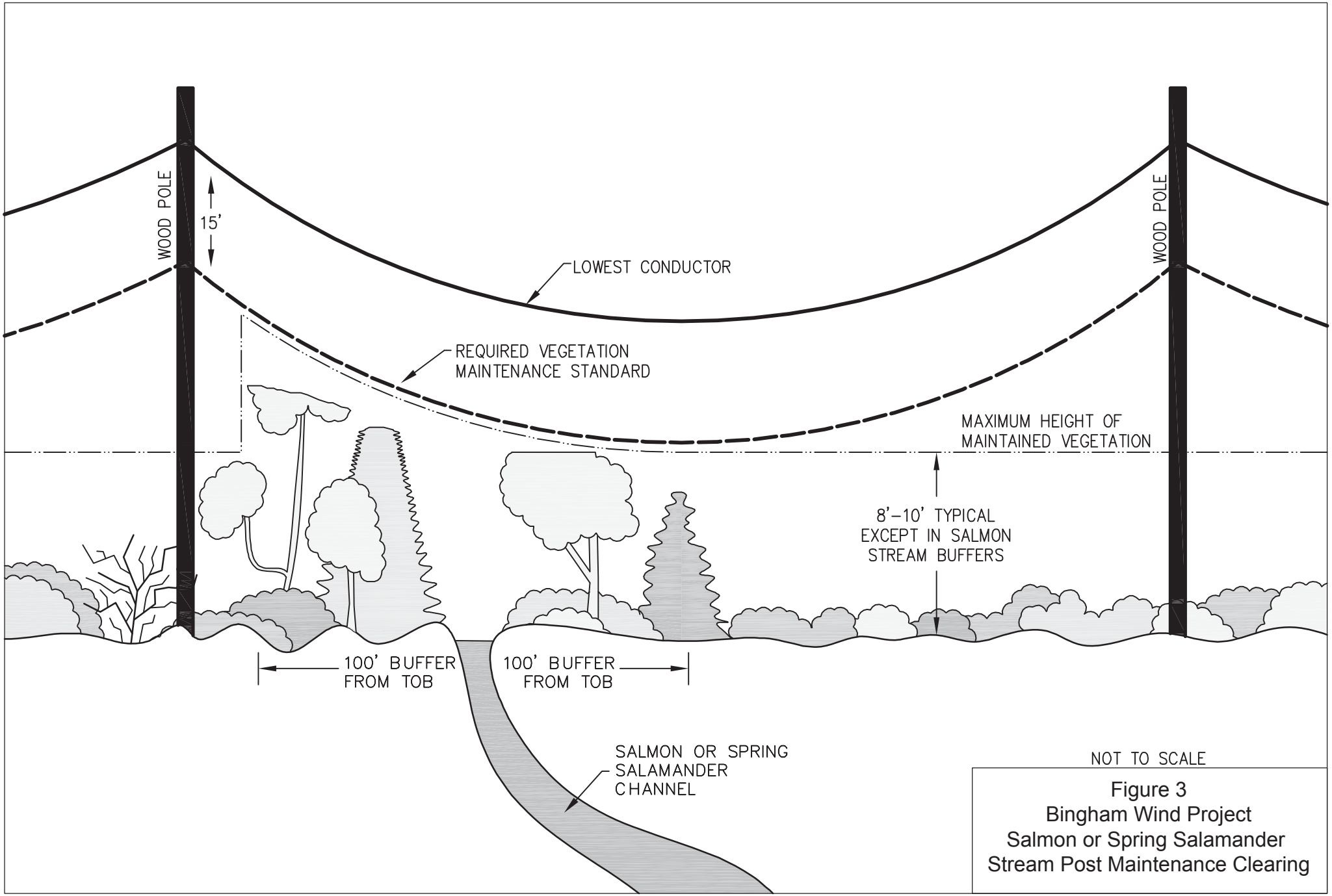


Figure 3
Bingham Wind Project
Salmon or Spring Salamander
Stream Post Maintenance Clearing

Exhibit 10B: Invasive Species Management Plan

EXHIBIT 10B
Invasive Species Management Plan

Bingham Wind Project
Somerset and Piscataquis Counties, Maine

Prepared for:

Blue Sky West, LLC
and
Blue Sky West II, LLC

Prepared by:

Stantec Consulting

April 2013

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1.0 PROJECT BACKGROUND

Blue Sky West, LLC and Blue Sky West II, LLC (Applicants),[1] subsidiaries of First Wind Energy, LLC, have proposed construction of the Bingham Wind Project (project), a utility-scale wind energy facility in Bingham, Moscow, Mayfield Township, Kingsbury Plantation, Abbot, and Parkman, in Somerset and Piscataquis Counties, Maine. The project includes 62 turbines (63 potential turbine locations are being permitted) in Bingham, Kingsbury Plantation, and Mayfield Township capable of generating up to 191 megawatts (MW) of electricity. Other project features include: upgrades to existing roads, and new roads, to access the turbines and crane paths; up to 5 permanent and up to 5 temporary meteorological (met) towers; an Operations and Maintenance (O&M) building in Mayfield Township; above and below ground 34.5 kilovolt (kV) electrical collector lines among the turbines (the majority of which will be buried alongside project roads) and connecting to a new collector substation in Mayfield Township; and an approximately 17-mile 115-kV generator lead connecting to an existing Central Maine Power Company (CMP) substation in Parkman, Maine. It is anticipated that a dynamic reactive device, such as a synchronous condenser, will be required at the project collector substation to meet the interconnection requirements of ISO NE and CMP.

The turbine areas, access roads, collector line, and generator lead will consist primarily of newly cleared right-of-way (ROW), with small sections of the generator lead paralleling existing roads and an existing CMP ROW. The newly cleared areas are primarily located in undeveloped land currently used for commercial forestry operations, with occasional dirt and gravel logging roads. Natural community features present within the project area include forested uplands and wetlands, scrub-shrub wetlands, emergent wetlands, and stream systems.

This Invasive Species Management Plan (ISMP) addresses the anticipated procedures for managing invasive plant species and enhancing the value of wetlands and uplands located in the turbine areas and within the collector line and generator lead ROWs. This ISMP is designed to supplement the existing ROW Vegetation Management Plan (VMP) as detailed in Section 10, Exhibit 10A, of the combined Maine Department of Environmental Protection (MDEP) Site Location of Development Act/Natural Resources Protection Act permit application for the project.

2.0 MANAGEMENT PLAN GOALS AND OBJECTIVES

The majority of the proposed turbine areas and collector line and generator lead ROWs are located within undeveloped forested areas. Vegetation clearing will be required for the construction of the turbines and the electrical lines. The natural communities will be permanently converted from forested communities to communities dominated by shrubs and herbaceous vegetation. Because of this disturbance, the turbine areas and the new ROWs could be subject to colonization by invasive species as a result of construction activities and a decrease in forest canopy.

As part of the Maine General Permit (GP) issued by the U.S. Army Corps of Engineers (Corps) in October 2010, an Invasive Species Control Plan is recommended for all Category 2 projects, unless otherwise directed by the Corps. An Invasive Species Control Plan is also recommended for Individual Permit applications. Accordingly, these types of plans are now a requirement for Corps permitting, and should include a program for post-construction monitoring of invasive species and implementation of appropriate invasive species control measures. Additionally, proposed changes to Chapter 375 of the MDEP Site Location of Development Act include minimum performance standards for electrical utility corridors (Appendix B of Chapter 375). As part of the general vegetation management performance standards, applicants must include an invasive species vegetation monitoring plan as part of their overall vegetation management plan.

The overall goal of this ISMP is to prepare a plan to prevent the introduction and spread of invasive plant species as a result of project construction. The ISMP also has the goal to develop a strategy that meets

[1] Blue Sky West, LLC is the wind energy project entity; Blue Sky West II, LLC is the electrical generator lead entity.

the goals and objectives of the Corps' Invasive Species Policy.[2] Ultimately, the Corps' goals are to "prevent introduction and establishment of invasive species to reduce their impact on the environment, economy, and health of the United States" and to employ an early detection and rapid response system in order to "develop and enhance the capacity to identify, report, and effectively respond to newly discovered/localized invasive species." Further, this ISMP will serve to preserve and enhance the functions and values of the wetlands and uplands within the project area. While complete eradication of invasive species is not a stated goal, this ISMP is designed to limit the spread of these species as much as possible. The ISMP includes the following steps:

- Identify locations in the turbine areas and along the collector line and generator lead ROWs in which invasive species presently exist in order to develop a baseline for future monitoring;
- Provide a plan for monitoring the status of invasive species within the project area and coordinate with the involved agencies regarding the results of the monitoring;
- Outline the anticipated schedule for initial monitoring and for eventual inclusion of the invasive species control plan into the standard vegetation maintenance plan;
- Identify appropriate strategies (e.g., mechanical cutting, herbicide application, biological control, or a combination thereof) for controlling and/or limiting the spread of invasive species within the turbine areas and along the collector line and generator lead ROWs; and
- Incorporate invasive plant species control strategies into the existing vegetation maintenance plan for the project.

3.0 INVASIVE SPECIES BACKGROUND

Invasive plants are non-native species whose introduction to an area causes or is likely to cause environmental or economic harm. Invasive plants often lack natural predators and can successfully colonize and thrive beyond their natural ranges, often out-competing native plants. Generally, these species have competitive adaptations, aggressive reproductive strategies, and efficient dispersal methods. The spread of invasive plant species in both wetland and upland areas is a concern for both biological reasons (e.g., threaten global biodiversity, reduce wildlife habitat value) and cultural/economic reasons (e.g., adverse aesthetic effects, reduced recreational opportunities).

The Maine Natural Areas Program (MNAP) maintains a list of plant species currently considered invasive in Maine.[3] Table 1 below presents the invasive species most likely to be present in the project area based on a review of the MNAP list, as well as on field surveys conducted by Stantec Consulting (Stantec) within the project area.

[2] Department of the Army. U.S. Army Corps of Engineers. *U.S. Army Corps of Engineers Invasive Species Policy.* June 2, 2009. Available at: http://www.nae.usace.army.mil/Regulatory/ISP/policy.pdf
[3] Available at: http://www.maine.gov/doc/nrimc/mnap/features/invsheets.htm

Table 1. Invasive Plant Species Likely to be Associated with the Bingham Wind Project

Common Name	Scientific Name
Norway Maple	*Acer platanoides*
Garlic Mustard	*Alliaria petiolata*
Japanese Barberry	*Berberis thunbergii*
Asiatic Bittersweet	*Celastrus orbiculatus*
Black Swallowwort	*Cynanchum louiseae*
Russian Olive	*Eleagnus angustifolia*
Autumn Olive	*Eleagnus umbellata*
Japanese Knotweed	*Fallopia japonica*
Glossy Buckthorn	*Frangula alnus*
Morrow's Honeysuckle	*Lonicera morrowii*
Tatarian Honeysuckle	*Lonicera tatarica*
Purple Loosestrife	*Lythrum salicaria*
Common Reed	*Phragmites australis*
Wood Bluegrass	*Poa nemoralis*
Common Buckthorn	*Rhamnus cathartica*
Multiflora Rose	*Rosa Multiflora*

4.0 EXISTING CONDITIONS

From 2009 through 2013, Stantec performed wetland delineations, vernal pool surveys, and rare, threatened, and endangered (RTE) species surveys within the project area. The results of these surveys are presented in Exhibit 7A of the combined MDEP Site Location of Development Act/Natural Resources Protection Act permit application for the project. During the course of each survey, Stantec documented occurrences of invasive plant species.

Two invasive species in three difference locations were documented within the project area, two along the generator lead and one in a wetland adjacent to a proposed access road. A patch of Morrow's honeysuckle was observed along Carlton Stream (Stream S062) in Parkman (Figure 1). The patch consisted of scattered shrubs extending approximately 75 feet from the edge of an existing road and parallel with Carlton Stream. A stand of common reed was observed along access road AR211C on the generator lead in Wetland PARK_W399 (Figure 2). The stand was approximately 20 feet by 10 feet in size along the edge of the existing access road. Two plants of Morrow's honeysuckle were observed in Wetland PARK_W411, near Stream S075, at the east end of the generator lead in Parkman (Figure 3). The plants were next to each other and approximately six to seven feet tall. No other invasive species were documented within the project area.

5.0 INVASIVE SPECIES MONITORING PROGRAM

5.1. GOALS AND OBJECTIVES

The Applicants are committed to monitoring and assessing the status of invasive plant species within the project area and to identify areas where invasive species control measures will be required to maintain or enhance the functions and values of uplands and wetlands. For the purposes of this ISMP, the project area is defined as the developed portions of the project, including the turbine areas and the collector line and generator lead ROWs. This monitoring program will target known occurrences of invasive species identified in Section 4.0 above, along with new occurrences of the invasive species listed in Table 1, and will provide recommendations that will be used to select and implement appropriate control options for each invasive species location.

The objectives of the monitoring program will be to:

- Update the status of invasive species within the project area in order to target the areas where control measures will be required;
- Define the types of control measures that are most appropriate for each invasive species location; and
- Provide input in order to incorporate the invasive species control measures into the overall VMP (Section 10, Exhibit 10-A).

5.2. METHODS

Following construction, the Applicants will retain a qualified, independent researcher to conduct the monitoring program, which will consist of field surveys of the project area to determine whether invasive species are present and to provide recommendations concerning control options. For each invasive species location, researchers will complete invasive species monitoring forms, take photographs of the species and the surrounding landscape, and record the location of the invasive species using a Global Positioning System (GPS) receiver. Any conditions that would influence the use of a particular type of invasive species control method will also be noted (e.g., wetlands, streams, private residences.). Populations of invasive species identified immediately adjacent to the project area will also be noted, although control strategies for these populations will not be developed. Field surveys will be conducted during the growing season when plant species are most easily identifiable. The monitoring effort will be scheduled to allow time for invasive species treatments to be implemented in the same growing season.

Invasive species monitoring within the project area will be conducted in the first full growing season following the completion of project construction and for a maximum of four years based on the results of the initial years of surveys and consultation with the appropriate Agencies. Construction of the project is expected to occur in 2014. See Table 2 below for the expected monitoring schedule. If densities of invasive species are found to be low at some point before the end of the first five years of monitoring, monitoring frequency may be reduced. The goal of the monitoring effort will be to identify locations where invasive species are present so that control measures can be implemented as soon as practicable, particularly in any areas where invasive species are beginning to colonize as a direct result of project construction. The monitoring will also allow for an evaluation of the effectiveness of the control measures. After the completion of monitoring and treatments, this ISMP will be integrated into the Applicants' existing VMP. The VMP states that vegetation maintenance will generally be carried out on a four-year or five-year maintenance cycle, depending on growth, weather, geographic location, and corridor width. Over time, as invasive species control becomes a standard component of the applicant's ROW vegetation management program, monitoring and control schedules may be adjusted to respond to site-specific issues (e.g., monitoring less frequently as densities decrease, instituting treatment in consecutive years to control an aggressive population).

5.3. MONITORING REPORT

The results of each year of invasive species monitoring will be detailed in a report that will include a summary of the field survey methods and results, a table that identifies the invasive species in the project area, a map showing the GPS location of each invasive species, copies of the monitoring forms, and representative photographs. Comparisons will be made as to whether invasive species are becoming more or less prevalent, based on a review of the pre-construction data and on the results of the previous year's monitoring results. The monitoring report will include recommendations regarding where invasive species control measures are required, the suggested type of control strategy, and the schedule for the implementation of control measures.

During the monitoring, reports will be submitted annually. The monitoring report will be provided to the Corps and the MDEP by March 31 of the year following the year in which the monitoring was conducted (e.g., for monitoring conducted in the summer of 2015, the monitoring report will be submitted by March 31, 2016).

Implementation of invasive species control measures will be based on the results of the monitoring and will not require approval from the regulatory agencies. The application of control measures will be performed pursuant to any standard permit and safety requirements governing such activities.

6.0 INVASIVE SPECIES CONTROL STRATEGIES

6.1. GOALS AND OBJECTIVES

To develop an effective approach for controlling invasive species within the project area, various factors must be considered. These include:

- The characteristics and functions/values of the wetlands and uplands in the project area;
- The invasive species that are present and their density within the project area;
- Sensitive areas within the project area, including wetlands, streams, vernal pools, RTE species, wildlife habitat, sand and gravel aquifers, and visual buffers;
- Adjacent land use developments, which can affect the value of wetlands in the project area and can influence the choice of control strategies; and
- The cooperation of the landowners and the potential lack of land use control, depending on the conditions of easements across private properties.

As a result of these factors, it should be recognized that invasive species control measures may not be practicable or highly effective in all areas within the project area. Additionally, once established, complete eradication of invasive species is unlikely given the aggressive nature of most invasive species.

6.2. TYPES OF CONTROL

In general, there are three types of invasive species control methods: mechanical, chemical, and biological. These control methods may be combined to provide a more effective control strategy.

Mechanical control measures such as digging, pulling, and cutting may be effective in controlling isolated invasive plants or small stands of plants. These methods are often necessary in sensitive natural resource areas such as wetlands, streams, wildlife habitat buffers, etc., where chemical control is not permitted or ecologically approriate. However, such techniques may be labor-intensive and may be impractical in areas with dense infestations of invasive species such as common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), and garlic mustard (*Alliaria petiolata*).

Chemical control (i.e., herbicides) is the most common alternative used for controlling invasive species along ROWs. If used selectively and in limited areas (i.e., not in wetlands with standing water or in or adjacent to streams), herbicides can be successfully applied in an environmentally-sound manner. In addition, herbicide applications often provide the most cost-effective method for controlling dense infestations of invasive species. However, chemical control is often not permitted in certain areas of the ROW based on the conditions established in the project's buffer plan (see Section 10 of the combined MDEP Site Location of Development Act/Natural Resources Protection Act permit application for the Project).

Biological controls can be effective in controlling purple loosestrife under certain conditions but are not yet proven for the control of other species that could be present within the project area. Consultation with the Corps indicates that species such as loosestrife beetles (*Galerucella calmariensis* and *Galerucella pusilla*) may be useful in controlling populations of purple loosestrife. At this time, purple loosestrife has not been identified within the project area, and the use of loosestrife beetles is unlikely to be recommended for this project.

6.3. CONTROL OF EXISTING INVASIVE SPECIES

Prior to construction, the Applicants will retain a qualified researcher to identify and remove the locations of the Morrow's honeysuckle plants along Carlton Stream (S062) and in Wetland PARK_W411 in

Parkman and the common reed patch in wetland PARK_W399 along the proposed generator lead (see Figures 1 – 3). For both locations of Morrow's honeysuckle, smaller plants will be hand-pulled or dug out of the ground where possible. If hand removal is not possible due to the size of the shrubs, the trunk of each plant will be cut at ground level and an aquatic-approved herbicide will be applied to the cut stump. For the patch of common reed, individual stems will be treated using the "clip-and-drip" method, where individual stalks of the plant are cut two to three feet aboveground level and herbicide is dripped into the cut stem. This method, while labor intensive, is effective on small, isolated patches of common reed. The stand may also be treated using a low-pressure backpack sprayer if the contractor determines that this method can be safely performed without resulting in drift to non-target species and if there is no standing water in the wetland at the time of the treatment.

In order to limit the spread of these species to other portions of the generator lead, the contractor will take the following steps surrounding the populations of these species:

- Minimize ground disturbance and exposure of soil near the Morrow's honeysuckle and common reed populations in order to reduce sprouting from the seed bank. Use of construction equipment within marked locations of these species should be avoided, if possible.
- All construction vehicles and/or construction mats used in these areas shall be washed prior to moving to a new section of the generator lead. All mud, dirt, debris, and plant material will be removed from the exterior, undercarriage, and tires/tracks of the equipment with a high-pressure washer. All construction equipment and vehicles working in this portion of the generator lead will be inspected prior to leaving the site.
- Soils excavated immediately adjacent to the occurrences of Morrow's honeysuckle or common reed will be loaded directly onto trucks, removed from the project area, and taken to a proper disposal site. Excavated soil from these areas will not be transported to other parts of the generator lead or used on other parts of the project.

After construction of the collector line and generator lead, careful observations should be made during annual monitoring at the location of these populations of Morrow's honeysuckle and common reed to determine if the initial control efforts were successful in limiting the spread of these species. Additional control efforts are likely to be required in these areas in order to limit their growth and spread in future years.

6.4. SCHEDULE FOR IMPLEMENTATION OF INVASIVE SPECIES CONTROLS

The Applicants will institute the control measures described in Section 6.3 above during all construction activities where the identified invasive species are present. Following construction, the Applicants recognize that early treatment measures can prevent the spread of invasive species, particularly in areas where such species were not present prior to construction of the project. As a result, the Applicants will implement an aggressive invasive species control approach in the first five years immediately following the completion of construction. Particular treatment efforts will be focused on preserving and enhancing the functions and values of the wetlands and uplands in the project area.

Based on the results of the monitoring program conducted after construction, the Applicants will schedule invasive species treatment measures annually, as soon as practicable after the field monitoring recommendations are received. The schedule for the treatment will depend on the types of controls recommended and the species identified. For example, mechanical removal of certain species can be performed almost any time of the year when plant species are identifiable, while herbicide applications and biological controls may require that work be done during the growing season to be most effective. Over time, the Applicant expects that the invasive species treatment program will be integrated into the overall ROW vegetation management effort.

Depending on the results of the monitoring, the Applicant may contract a field biologist or wetland scientist to work with its ROW management contractor to oversee the implementation of invasive species control measures, to recommend methods for maximizing the potential re-establishment of native vegetation, and to suggest wetland plantings to enhance habitat values. For locations where invasive

species controls are implemented, monitoring performed in subsequent years will serve to assess the effectiveness of such measures.

6.5. CONTROL STRATEGIES

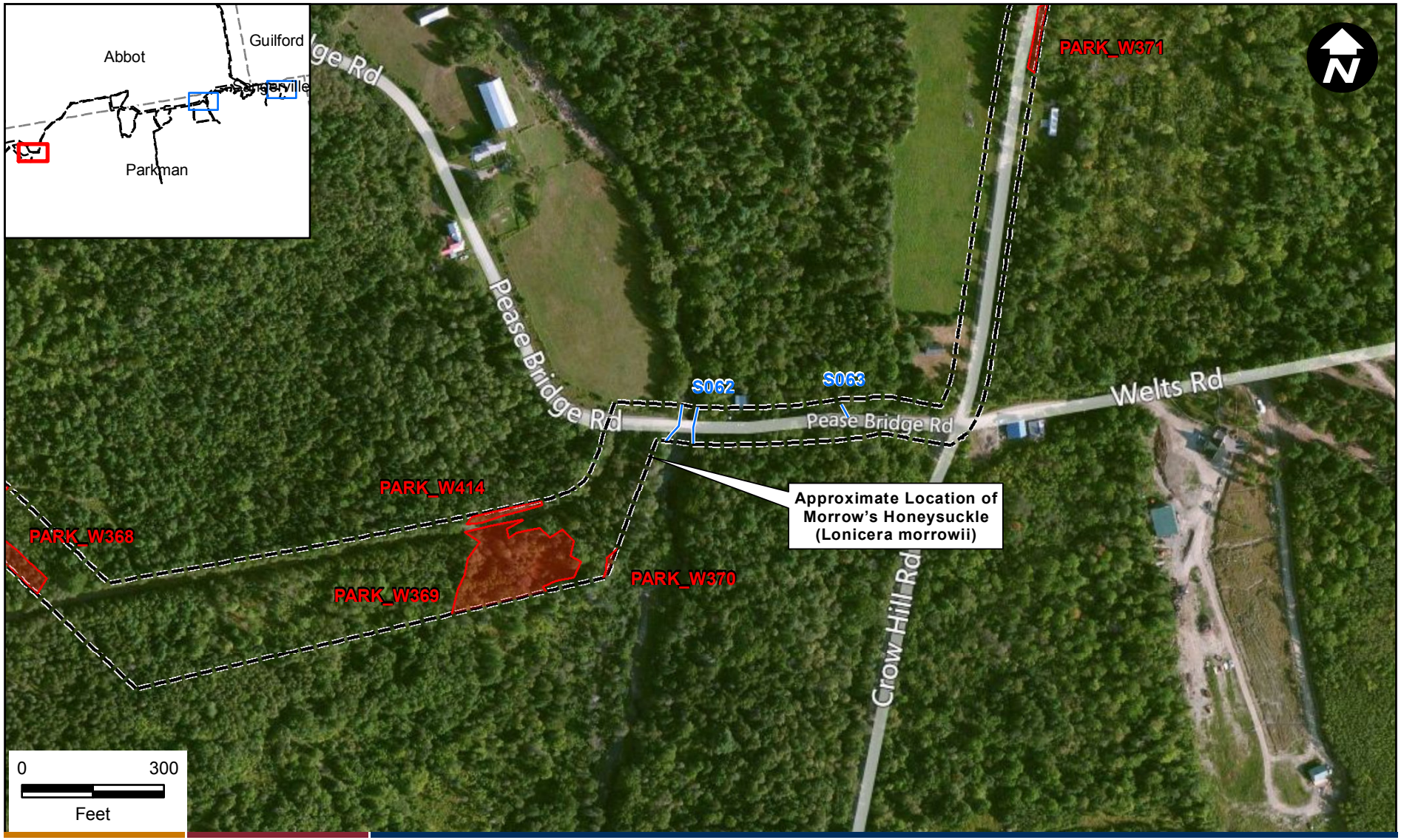
Although specific treatments will be refined based on the results of the monitoring program, it is anticipated that the most effective general approach for controlling invasive species within the project area will likely be a combination of mechanical removal and application of herbicides in selected locations during the growing season. Repeated spot herbicide applications may be required in subsequent growing seasons in order to achieve effective control. Based on the small amount of invasive species documented in the proposed project area prior to construction, large-scale control is not anticipated.

The need for and types of chemical control of invasive species will be carefully evaluated, particularly in sensitive areas such as wetlands, streams, and vernal pools, and areas where the ROW is not owned by the applicant. Additionally, invasive species may be present in wetland and upland areas that are outside of the defined project area boundaries. The applicant has no authority to attempt to control invasive species that may be present in adjacent areas outside of the project area.

Herbicide applications will be performed according to applicable laws and regulations put forth by the Maine Bureau of Pesticides Control, MDEP, and the United States Environmental Protection Agency. The type of herbicide(s) to be used, method of application, and schedule for application will be determined based on the locations of the targeted areas and the particular invasive species to be controlled.

Similarly, the use of any biological control measures will be coordinated with MDEP and the Corps. The species used for biological control will be obtained from approved sources and released pursuant to specifications.

Figures



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Stantec Consulting Services Inc.
30 Park Drive
Topsham, ME USA
04086
Phone (207) 729-1199
Fax: (207) 729-2715
www.stantec.com

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Legend

- Delineated Stream
- Delineated Wetland Boundary
- Delineated Wetland
- Reporting Limits

Notes

1. Aerial imagery provided by Bing Maps aerial imagery web service ((c) 2010 Microsoft Corporation and its data suppliers.)

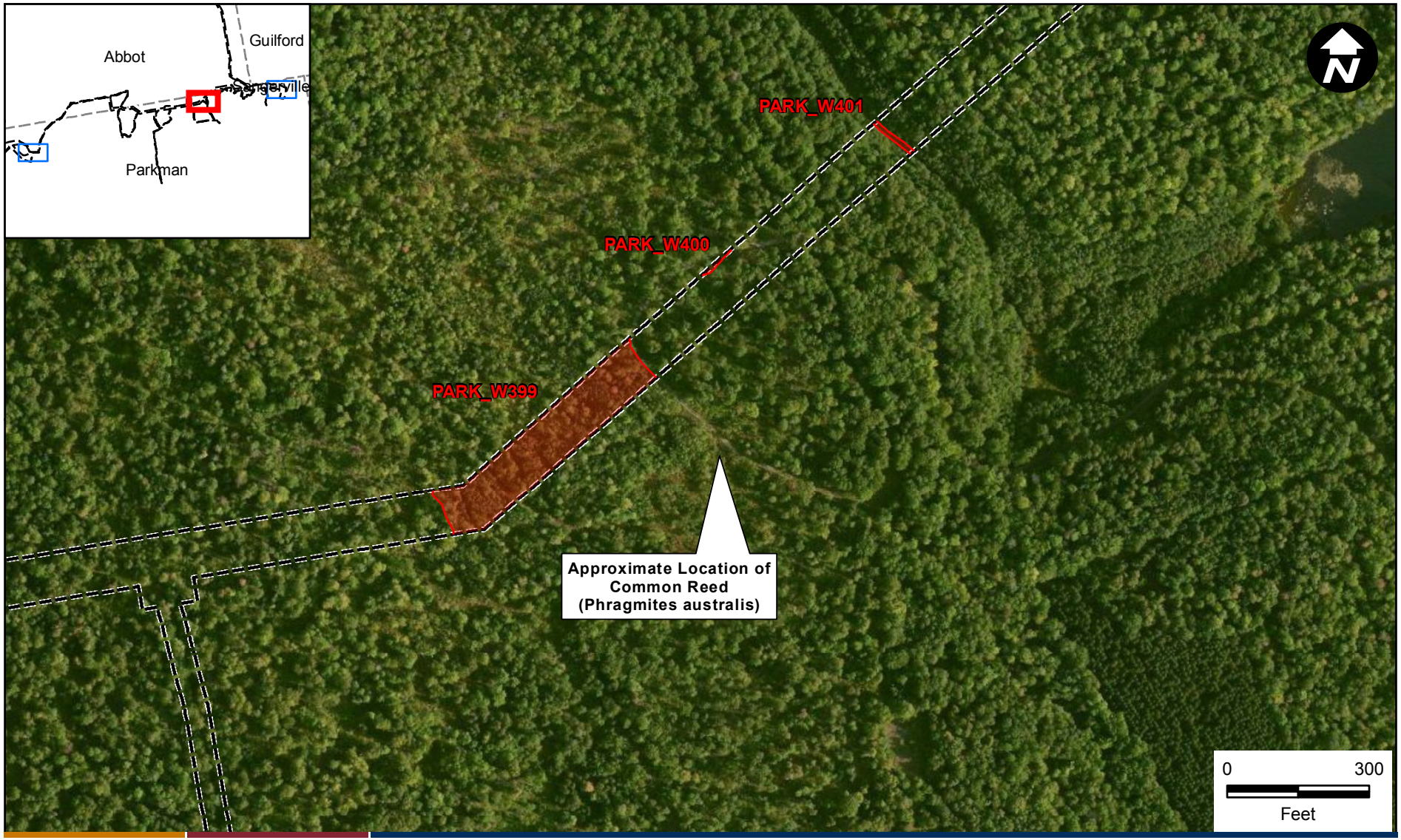
Client/Project

Bingham Wind Project

Figure No.
1

Title
Morrow's Honeysuckle Location
Carlton Stream

3/29/2013



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Stantec Consulting Services Inc.
30 Park Drive
Topsham, ME USA
04086
Phone (207) 729-1199
Fax: (207) 729-2715
www.stantec.com

00539_10B-2_InvasiveSpecies.mxd

Legend

- Delineated Wetland Boundary
- Delineated Wetland
- Reporting Limits

Notes

1. Aerial imagery provided by Bing Maps aerial imagery web service ((c) 2010 Microsoft Corporation and its data suppliers.)

Client/Project

Bingham Wind Project

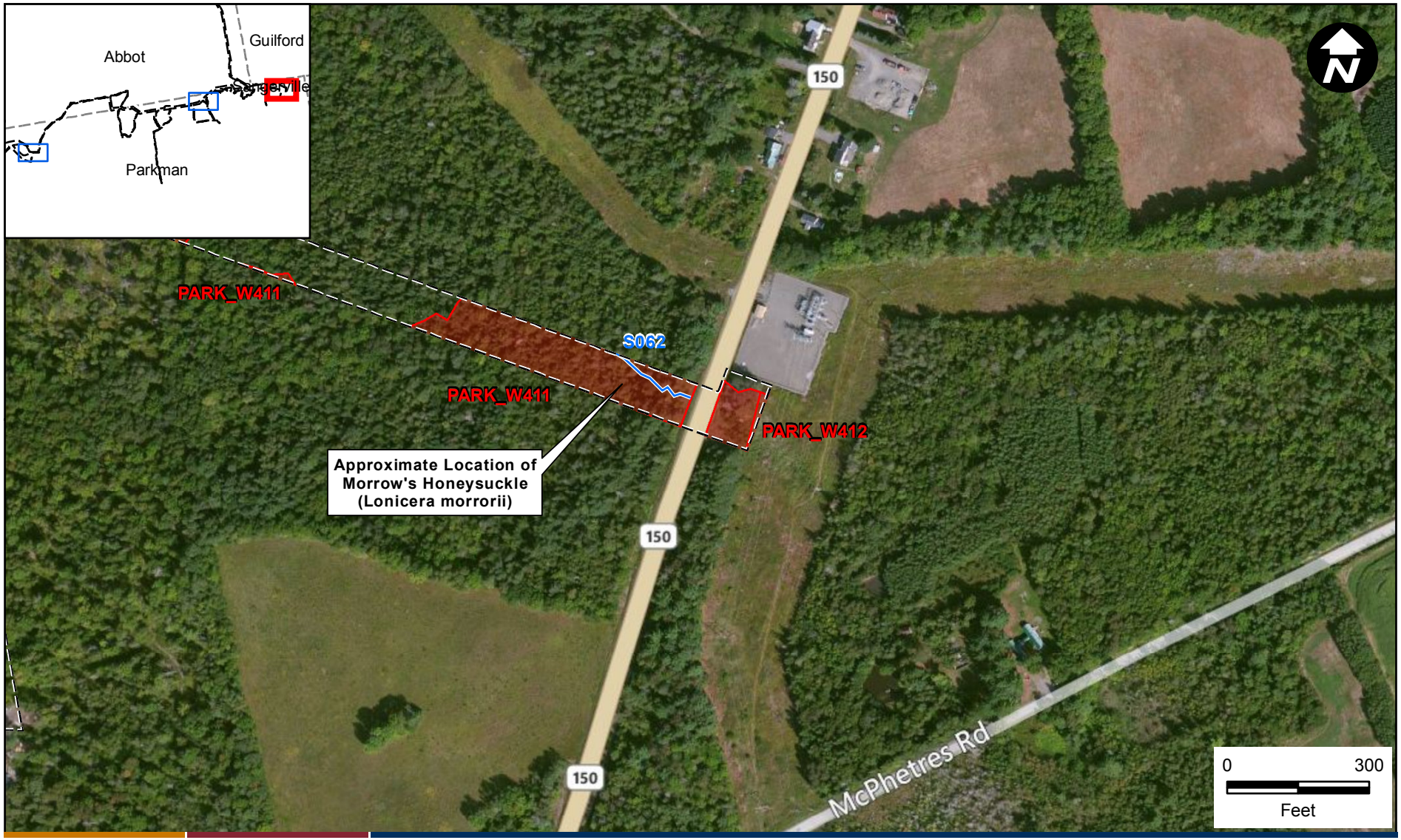
Figure No.

2

Title

Common Reed Location Wetland PARK_W399

3/29/2013



195600539

Stantec Consulting Services Inc.
30 Park Drive
Topsham, ME USA
04086
Phone (207) 729-1199
Fax: (207) 729-2715
www.stantec.com

00539_10B-3_InvasiveSpecies.mxd

Legend

- Delineated Stream
- Delineated Wetland Boundary
- Delineated Wetland
- Reporting Limits

Notes

1. Aerial imagery provided by Bing Maps aerial imagery web service ((c) 2010 Microsoft Corporation and its data suppliers.)

Client/Project

Bingham Wind Project

Figure No.
3

Title
Morrow's Honeysuckle Location
Wetland PARK_W411

3/29/2013